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Annual Report 1999/2000 - EL1/98 - Scamander

Griffith Geological Consultants Proprietary Limited\*  
Griffith, A. EL1/98

**MICROFILMED**  
FICHE No. 015263-64

**EL 1/98 - SCAMANDER**

**ANNUAL  
REPORT  
1999/2000**

EL1/98 Pt 1  
APR 2000  
See folio 59

**ANSON GRIFFITH**

**28 March 2000**

GRIFFITH GEOLOGICAL CONSULTANTS PTY LTD  
A.C.N. 074 958 544

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Annual Report 1999/2000 - EL1/98 - Scamander

Griffith Geological Consultants Proprietary Limited\*  
Griffith, A. EL1/98

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Annual Report 1999/2000 - EL1/98 - Scamander

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Griffith, A. EL1/98

## **EL 1/98 – SCAMANDER**

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**ABSTRACT**

Exploration Licence EL 1/98 comprising 202 square kilometres, was granted to Griffith Geological Consultants Pty Ltd on 24<sup>th</sup> 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. 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.

Exploration of the alluvial tin and the potential of the Scamander Tier Dyke to host economic gold mineralisation proved disappointing. These areas were relinquished from EL 1/98 at the end of year 1, reducing the exploration licence in size to 40 square kilometres.

Diamond drilling continued at the Orieco Prospect during the year and was aimed at further evaluating the potential of the prospect to host a small tonnage, high grade resource. One diamond drill hole was completed under the existing workings at the Orieco Prospect. Intersections from the drill hole include 4.05m @ 1.10% Cu and 26.3 g/t Ag and 2.60m @ 0.74% Cu and 43.8g/t Ag. A second diamond drill hole was completed to the south east of the prospect to test gossanous material. However, no significant mineralisation was encountered in the hole.

Additional drilling is scheduled for year 3 to assess the potential of the mineralisation developed along strike at the south Orieco Prospect. Detailed follow-up of the gold anomaly detected at Johnny Fitz Creek is also scheduled for year 3.

**TABLE OF CONTENTS**

	Page
1.0 Introduction	1
2.0 Exploration Philosophy and Objectives	2
3.0 Location and Access	3
4.0 Regional Geology	4
5.0 Previous Work	5
5.1 Mining History	
5.2 Previous Exploration	
6.0 Exploration Completed During the Period	6
6.1 Orieco Prospect	
7.0 Discussion of Results	7
7.1 Orieco Prospect Diamond Drilling	
8.0 Conclusions	9
9.0 Environment	10
10.0 Expenditure Statement	11
11.0 References	12
12.0 Keywords	13
13.0 Acknowledgments	14

**LIST OF FIGURES**

- 1.0        Locality Map
- 2.0        Geology Map
- 3.0        Drill Hole Section Hole 99ORDD-2

**LIST OF TABLES**

- Table 1     Diamond Drill Hole 99ORDD-2 Significant Assay Results

**APPENDICES**

- Appendix 1    Genalysis Laboratory Reports
- Appendix 2    Drill Hole 99ORDD-2 Drill Log  
                Drill Hole 99ORDD-2 Core Photographs
- Appendix 3    Drill Hole 99ORDD-3 Drill Log  
                Drill Hole 99ORDD-3 Core Photographs

**PLAN SUPPLEMENT**

Plan 1	Drill Hole Section 99ORDD-2 Au Assays
Plan 2	Drill Hole Section 99ORDD-2 Ag Assays
Plan 3	Drill Hole Section 99ORDD-2 Cu Assays
Plan 4	Drill Hole Section 99ORDD-2 Pb Assays
Plan 5	Drill Hole Section 99ORDD-2 Zn Assays

## 1.0 Introduction

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

Due to disappointing results from regional exploration activities, the exploration licence was reduced in total area to 40 square kilometres at the end of year one.

Exploration activities completed during the reporting period include the completion of two diamond drill holes at the Orieco Prospect for a total advance of 232.30 metres.

The following report summarises exploration activities and results completed within the licence during the period 1999/2000.

## 2.0 Exploration Philosophy and Objectives

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

- The continued assessment of the potential of the Orieco Prospect 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 licence changing to gentle slopes and flat laying areas in the vicinity of the coastal regions.

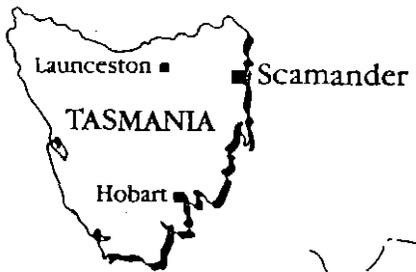
Vegetation within the licence is dominated by light, open eucalypt forest with dense undergrowth generally restricted to areas adjacent to established drainages. The central area of the licence from Scamander through to the Loila Tier contains established radiata pine plantations.

595000E

600000E

605000E

637010



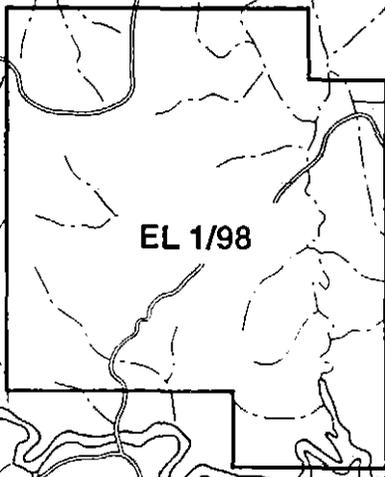
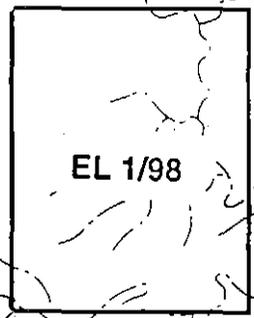
5425000N

St. Helens

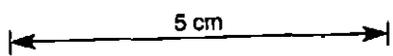
5420000N

5415000N

5410000N



Scamander



SCAMANDER EL 1/98  
LOCATION  
MAP  
Scale 1:100,000

FIGURE 1

#### 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 fluviatile 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 is given in Figure 2.

637012

143°15'E

St. Helens

Silver Echo

Lalla Rookh

EL 1/98

Baden Powell

Price

Edwards

Carsons De Beers

West Pinnacle

North Orieco

Tarmouth

41°25'S

TASMAN SEA

EL 1/98

East Pinnacle

North Ringarooma

Orieco

South Orieco

Ringarooma

Paul Beahr

North Scamander

Beulah

Scamander Bell

Scamander

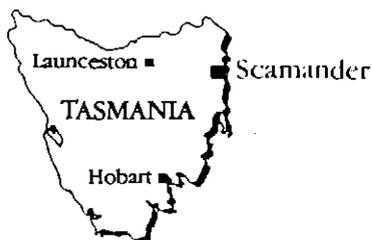
Scamander

Source: Geological Survey of Tasmania  
Dept. Mines - Hobart

5 cm

LEGEND

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



0 5km

SCAMANDER EL 1/98

GEOLOGY MAP

Scale 1:100 000

FIGURE 2

## **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 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.

Two diamond drill holes was completed during the period. Drill hole 99ORDD-2 was drilled to test the mineralisation beneath the existing workings near the adit entrance. A second drill hole 99ORDD-3, was collared to the south-east of the prospect to test the potential of a surface gossan.

## 7.0 Discussion of Results

### 7.1 Orieco Prospect Diamond Drilling

Two diamond drill holes for a total advance of 232.30 metres, were drilled at the Orieco Prospect during the year.

Diamond drill hole, 99ORDD-2, totalling 115.80 metres was drilled in the vicinity of the main adit entrance to the Orieco Mine. The drill hole was designed to test the thickness and grade of the copper-zinc-silver-gold mineralisation developed at a depth of approximately seventy 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 1-3.

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 1**

**Drill Hole 99ORDD-2 Significant Assay Results**

From (m)	To (m)	Ag (ppm)	Cu (ppm)	Zn (ppm)
102.50	103.60	70	3.05%	880
103.60	104.50	10	4100	320
104.50	105.55	10	4100	490
105.55	106.55	10	2950	580
106.55	107.55	0	2250	400
107.50	108.50	0	920	620
108.50	109.30	10	5600	490
109.30	110.00	10	110	520
110.00	111.10	90	1.35%	1.35%

---

## 8.0 Conclusions

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

- The copper-silver mineralisation developed at the Orieco Prospect while offering encouragement with elevated assays, appears to remain narrow in width at depth.
- Additional diamond drilling is warranted along strike to the south to test the depth potential of the outcropping gossans.
- Additional follow-up exploration remains to be completed at the Johnny Fitz Creek area to test the area for gold mineralisation.

## 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.

## 10.0 Expenditure

The total expenditure for EL 1/98 Scamander as at 31 December 1998 is \$83,706.

**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.
- GRIFFITH, A., 1999. EL1/98 Scamander. Annual Report 1998/1999 (unpublished)
- MONTGOMERY, A.M., 1893. Report on Thureau's Deep Lead, Near George's Bay

## 12.0 Keywords

Scamander, St Helen's, Johnny Fitz Creek, 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**

637024

# Genalysis Laboratory Services Pty. Ltd.

ANALYSTS AND CONSULTING CHEMISTS  
ACN: 008 787 237

ATTENTION A GRIFFITH

GRIFFITH GEOLOGICAL  
36 SKYLINE DRIVE  
HOWRAH TAS 7018  
AUSTRALIA

# Analytical Report

## COMMENTS

ATTENTION: A GRIFFITH....  
D/CORE....

## JOB INFORMATION

JOB CODE :6.3/991907  
No. SAMPLES :23  
ELEMENTS :6  
CLIENT O/N :GRIFFITH GEO  
DATE RECEIVED :21/04/99  
DATE COMPLETED :06/05/99

## 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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P.O. BOX 144 GOSNELLS WA 6990  
Tel: (08)9459 9011 Fax: (08)9459 5343  
Email: genalysis@inf.net.au

### 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

### 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



637025

## 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)

Drill Core 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

637026

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 P1050	x	80	210	x	30	2.72
2 P1051	x	130	260	x	40	2.74
3 P1052	x	150	380	x	30	2.72
4 P1053	0.01	460	920	* x	330	* 2.80
5 P1054	0.01	70	170	x	20	2.76
-----						
6 P1055	x	280	170	x	50	2.74
7 P1056	0.01	1350	180	x	20	2.76
8 P1057	0.01	2500	440	x	10	2.74
9 P1058	x	1500	450	x	20	2.72
10 P1059	0.01	3.05%*	880	70	30	2.94
-----						
11 P1060	0.01	4100	320	10	20	2.76
12 P1061	0.01	4100	490	10	10	2.72
13 P1062	x	2950	580	10	30	2.73
14 P1063	0.01	2250	400	x	20	2.75
15 P1064	0.01	920	620	x	20	2.71
-----						
16 P1065	0.03	5600	490	10	10	2.74
17 P1066	0.07	110	520	10	70	2.69
18 P1067	0.04	1.35%*	1.35%*	90	1000	* 2.98
19 P1068	0.02	1700	640	x	50	2.84
20 P1069	0.01	1350	320	x	20	2.81
-----						
21 P1070	x	430	150	x	50	2.80
22 P1071	0.01	490	260	x	30	2.81
23 P1072	0.01	1300	170	x	50	2.78
ch.0001(P1050	) x	80	210	x	40	
STD: FA1	0.96					
-----						
STD: TKC1		1850	2250	10	1950	



# METHOD CODE DESCRIPTIONS

637027

## 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

99ORDD2

HOLE NO: 99ORDD2

SECTION:

GRID:

## PROJECT CODE

TENEMENT : EL 1/98

PROSPECT : ORIECO

GRID

MAP REFERENCE : SCAMANDER TIER

LOCATION : ORIECO

HOLE TYPE : DIAMOND

## \*\*COLLAR COORDINATES AND RL\*\*

## SURVEYED:

AMG 5413740N 601120E 38RL

PRE-COLLAR DEPTH 0m

FINAL DEPTH 115.80m

PURPOSE OF HOLE : Resource Definition

HOLE STATUS : Complete

COMMENTS : Ore intersection 70m  
below existing workings

## SURVEY DATA

Survey Method: Eastman Single Shot

Depth	Azimuth	Inclination
36.8	038	-45
115.8	035	-43

## SUMMARY LOG

0.00-11.30m Quartz Sandstone  
 11.30-14.60m Siltstone  
 14.60-28.00m Interbedded Quartz Sandstone and  
 Siltstone  
 28.00-99.20m Quartz Sandstone and Interbedded  
 Siltstone  
 99.20-115.80m Foliated and Silicified Quartz  
 Sandstone-Mylonite

## \*\* DRILLING SUMMARY\*\*

DIAMOND 0.00 115.80 BQTK

Drilling Contractor : LIDDS

Drill Rig: : Gopher 28

Date Started : 21 Feb 99

Date Completed : 27 Feb 99

Logged By : AG

Sampled By : AG

Material Left in Hole : NIL

Base of Complete Oxidation : 7.90m

Top of Fresh Rock : 7.90m

Water First Encountered : nil

Water Inflow Estimate : nil

## SIGNIFICANT ASSAYS

102.50-103.60m 70ppm Ag 3.05% Cu

110.00-111.10m 90ppm Ag 1.35%Cu

1.35%Zn

ORIECO	DIAMOND DRILL LOG	99ORDD2
--------	-------------------	---------

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
0.00	1.20	CORE LOSS			
1.20	11.30	<p>QUARTZ SANDSTONE</p> <p>Pale gray to tan coloured, fine grained, massive quartz sandstone. Sandstone is partly oxidised from 1.20-7.90m, with ferric oxides strongly developed along joint planes. Weakly developed, &lt;5%, white, massive quartz veinlets typically 1-2mm in width. Veinlets vugged in part with no significant mineralisation observed. Veinlets typically orientated at 10 and 40 degrees to the core axis.</p> <p>7.90m Base of complete oxidation.</p>			
11.30	14.60	<p>SILTSTONE</p> <p>Black, fine grained, massive siltstone. Upper contact sharply defined and orientated at approx 45 degrees to the core axis.</p> <p>11.30-13.00m Moderate 5%, white-gray coloured quartz-?kaolin veinlets 1-2mm in width. Veins are discontinuous, non-mineralised and orientated at approximately 45 degrees to the core axis.</p>			
14.60	28.00	<p>INTERBEDDED QUARTZ SANDSTONE AND SILTSTONE</p> <p>Gray, fine grained, interbedded quartz sandstone and siltstone exhibiting repetitive fining upwards cycles. Sandstone units are typically gray, massive, fine to medium grained and grade into gray to black coloured, massive to bedded siltstones. Sedimentary structures developed include parallel bedding, cross-bedding and small scale slump structures. The interval contains approximately 5% white to gray quartz-kaolin veinlets + rare pyrite 1-2mm in thickness orientated at 10 and 45 degrees to the core axis.</p>			

ORIECO

## DIAMOND DRILL LOG

99ORDD2

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
28.00	99.20	<p>QUARTZ SANDSTONE AND INTERBEDDED SILTSTONE</p> <p>Gray, to slightly green coloured, fine to medium grained quartz sandstone with minor silt interbeds developed at 31.10m-32.00m: 34.80m-35.0m:46.60m-48.0m:50.2m-51.50m. The silt horizons are typically black in colour. Sedimentary structures recognised include parallel bedding, small scale cross-bedding, slump and flame structures. The sequences exhibit repetitive fining upward cycles with gradational contacts between the silt and sandstone intervals.</p> <p>37.20-48.00m Zone of approximately 5% white to gray coloured quartz veinlets typically 1-2mm in width. Veinlets orientated at 10 and 40 degrees to the core axis and increase in intensity locally to become stockworked. Veins contain rare scattered pyrite cubes and blebs</p> <p>48.00-49.70m Sandstone moderately silicified and fractured, with 5% fine grained pyrite+chlorite+quartz veinlets.</p> <p>59.00-60.10m Moderately silicified sandstone with 10% white-gray quartz+chlorite veinlets 2-5mm thickness. Veins typically orientated at 60 degrees to core axis with trace fine grained pyrite.</p> <p>66.70-67.30m Moderately silicified sandstone with 10% white-gray quartz+chlorite veinlets 2-5mm thickness. Veins typically orientated at 60 degrees to core axis with trace fine grained pyrite.</p> <p>70.20-72.80m Zone of approximately 10% white to gray coloured quartz veinlets typically 1-2mm in width. Veinlets orientated at 10 and 60 degrees to the core axis and increase in intensity locally to become stockworked. Veins contain rare scattered pyrite cubes and blebs.</p> <p>72.80-79.50m Weak, 1% white coloured, massive quartz veins 2-3mm in width @ 40 degrees to core axis. Trace fine grained pyrite cubes</p> <p>79.50-80.20m Strongly silicified fine to medium grained, gray to pale green coloured sandstone with strong 10% gray quartz-chlorite veinlets to 10mm. Veins are typically 5mm in width fine grained pyrite+ black massive chalcocite+trace chalcopyrite. Veins preferentially orientated at 40 degrees to the core axis.</p> <p>80.20-85.80m Trace 1% white, massive quartz veinlets 1-2mm orientated at 10 and 40 degrees to the core axis. Veinlets are non mineralised.</p>			

ORIECO

## DIAMOND DRILL LOG

99ORDD2

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
		85.90m 20mm wide quartz+pyrite+chalcopryrite vein at 40 degrees to the core axis. Host sandstone is strongly silicified.			
		88.35m Zone 5cm in width containing mulyple white, massive quartz veins typically 1cm in width and orientated at 40 degrees to the core axis. Quartz veins contain minor chlorite and pyrite cubes.			
		90.30-91.30m Gray-pale green, fine grained, partly silicified and massive quartz sandstone. Interval contains 5% white-gray massive quartz veinlets+ minor pyrite orientated at 40 degrees to the core axis.			
		91.35m 5-10mm wide quartz-pyrite-chalcopryrite vein, 40 degrees to the core axis			
		92.60m 10mm wide, white to gray coloured, massive, quartz-chlorite-chalacocite vein at 20 degrees to the core axis. Host sandstone locally fractured with open vughs which have been partly infilled by black fine grained chalcocite + pyrite.			
		94.0-99.90m Zone of 5% multiple white, massive quartz veins typically 1cm in width at 40 degrees to the core axis. Veinlets with trace fine grained pyrite and chalcocite.	P1050	94.00	95.00
			P1051	95.00	96.00
			P1052	96.00	97.00
99.90	115.80	<b>FOLIATED SILICIFIED QUARTZ SANDSTONE - MYLONITE</b> Gray, fine grained, foliated moderate to strongly silicified quartz sandstone/mylonite. The zone represents the main structure hosting the copper mineralisation developed at the Orieco Prospect	P1053	97.00	98.00
			P1054	98.00	99.00
			P1055	99.00	99.90
			P1056	99.90	100.80
			P1057	100.80	101.60
		99.90-102.50m Zone moderatley silicifed, with approximately 5% pyrite+chalcopryrite+chlorite veinlets 1-2mm in thickness. Veins are typically discontinuous, but exhibit a preferential orientation of 30 degrees to the core axis.	P1058	101.60	102.50
			P1059	102.50	103.60
			P1060	103.60	104.50
		102.5-103.60m Zone of intense (70%) pyrite+chalcopryrite+chalcocite veining which may be locally stockworked. Chalcocite is generally present as either a trace or accessory phase usually in void spaces. No sheared contacts to the mineralisation,veins exhibit a gradual increase in intensity	P1061	104.50	105.55
			P1062	105.55	106.55
			P1063	106.55	107.50
			P1064	107.50	108.50

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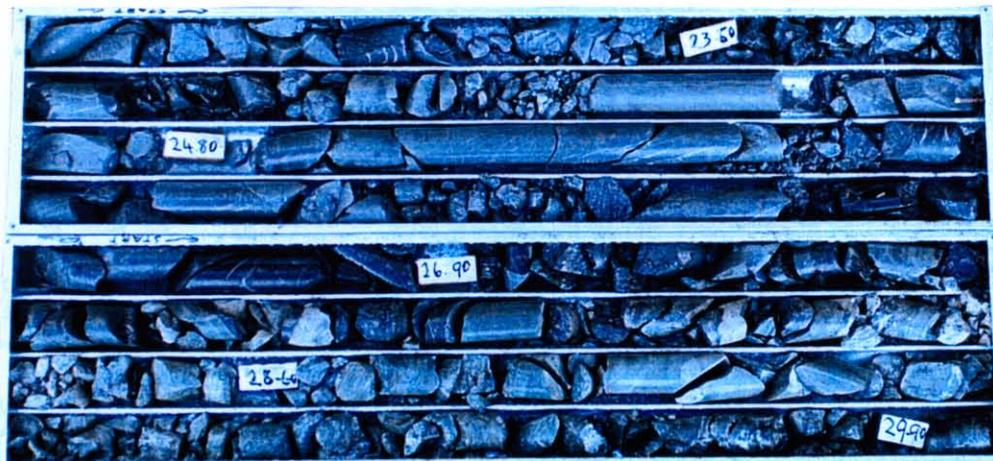
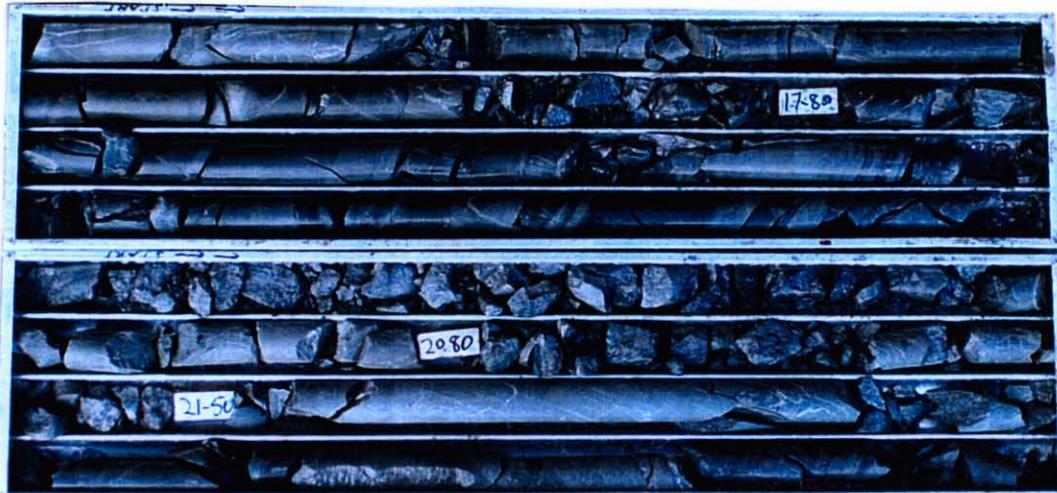
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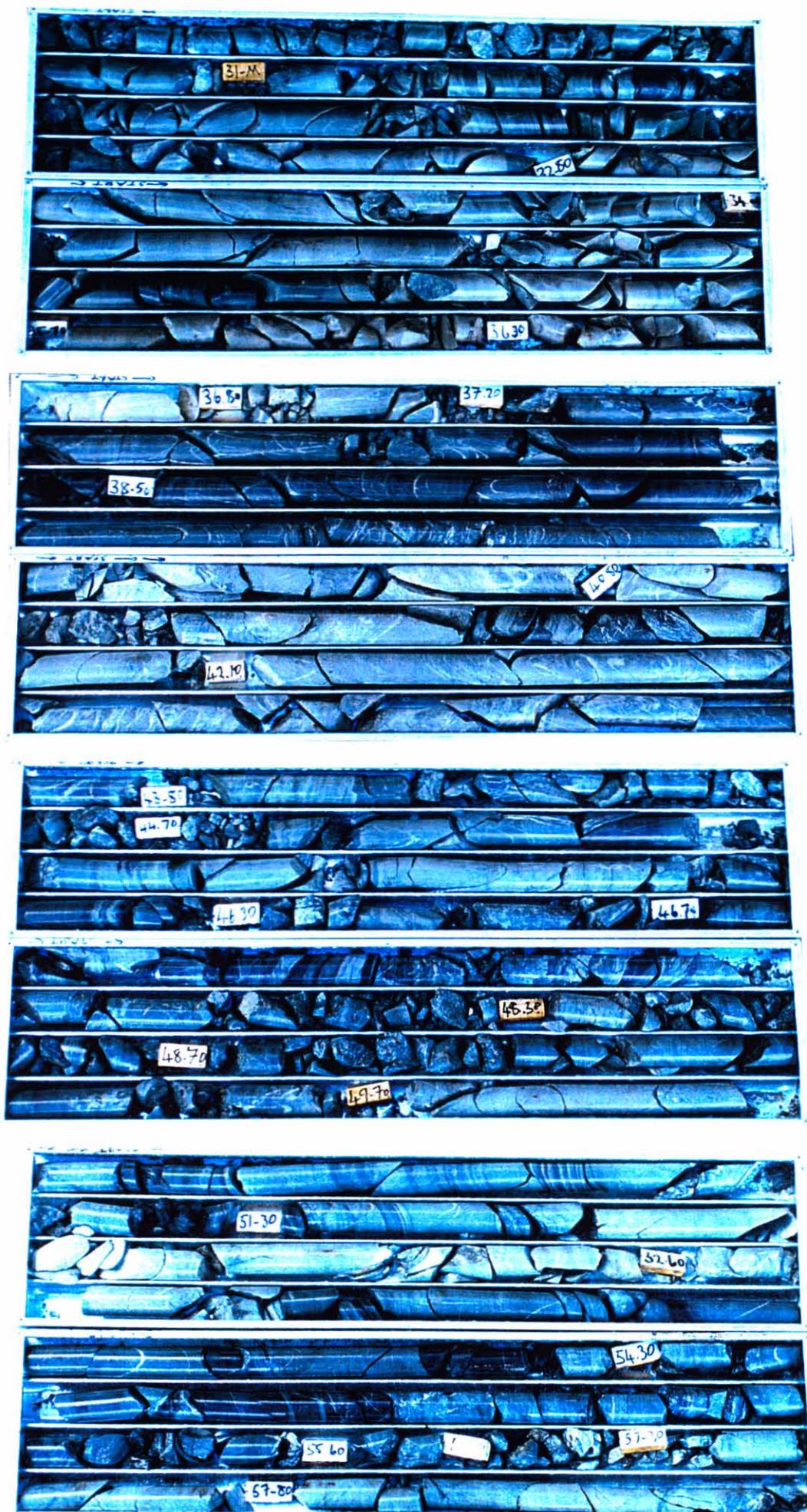
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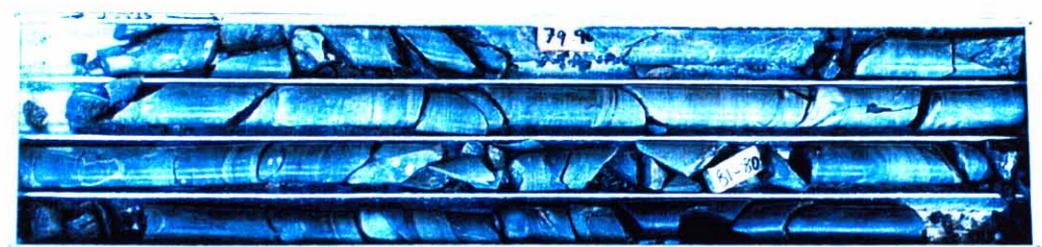
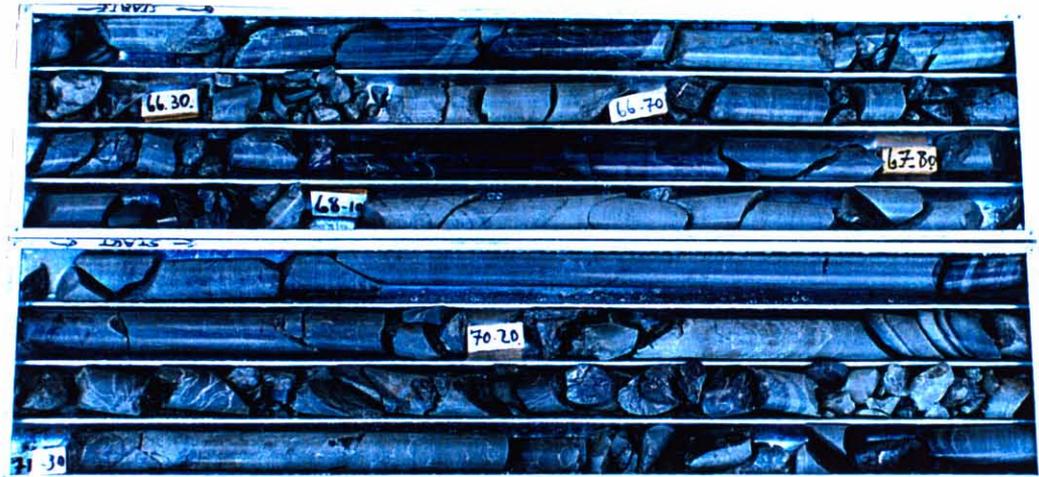
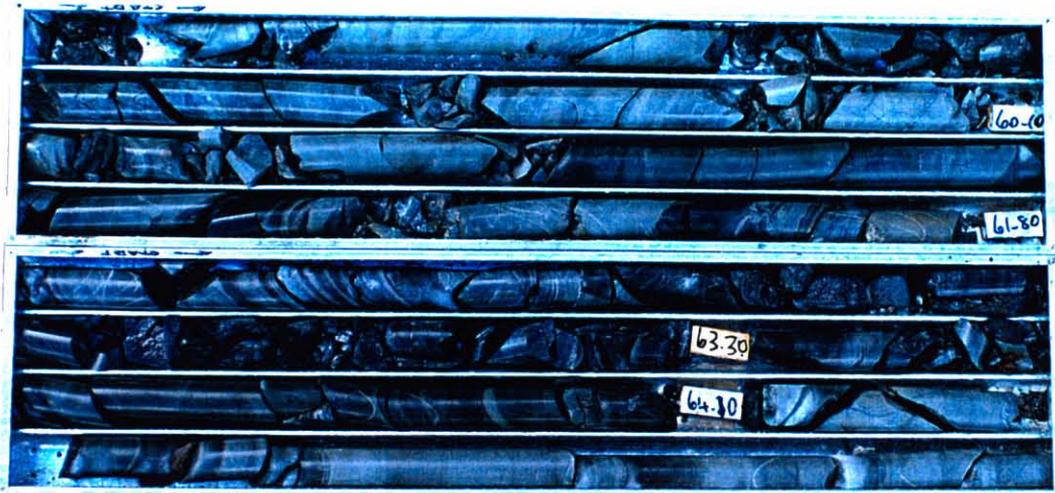
99ORDD2

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
		103.6-115.80m Zone of weak (1%) pyrite + chalcopyrite occurring either as veinlets typically 1-2mm in width or as isolated aggregates. Veinlets typically 30-40 degrees to the core axis. Two vein styles recognised. Type 1: pyrite veinlets+fine grained black chalcocite or Type 2: veinlets with a central chalcopyrite core rimmed by fine grained pyrite.	P1065 P1066 P1067 P1068 P1069 P1070 P1071 P1072	108.50 109.30 110.00 111.10 112.00 113.00 114.00 115.00	109.30 110.00 111.10 112.00 113.00 114.00 115.00 115.80
		END OF HOLE 115.80M			

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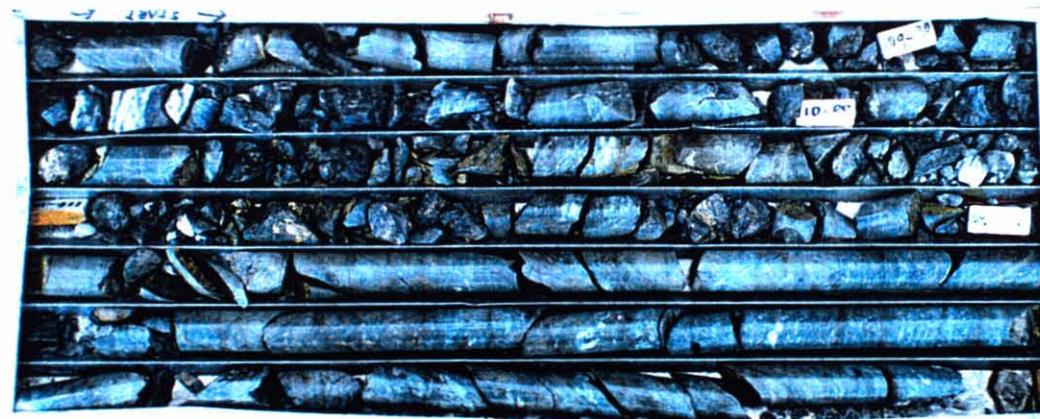
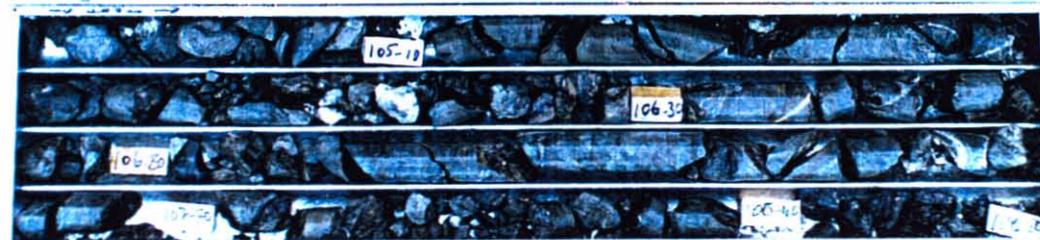
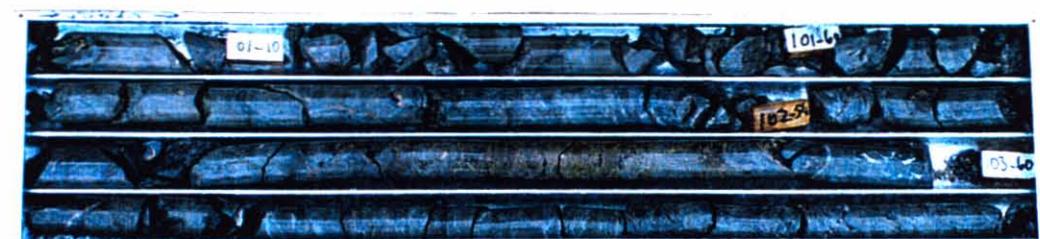
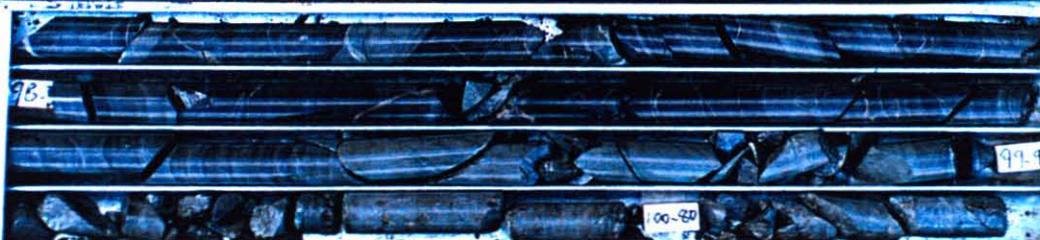
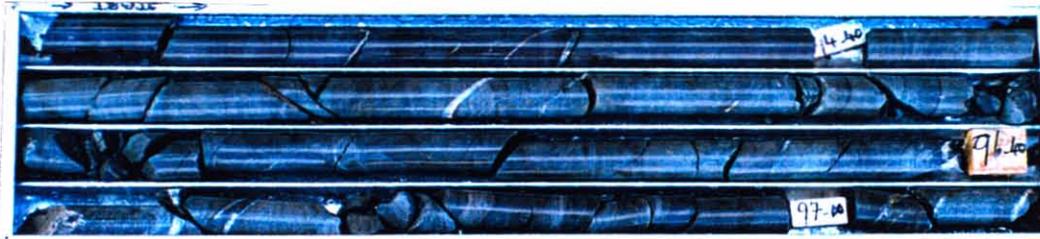
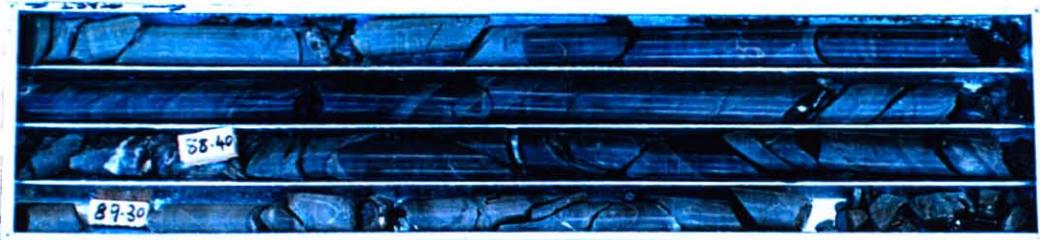




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**APPENDIX 3**

ORIECO PROJECT

99ORDD3

HOLE NO: 99ORDD3 SECTION: GRID:

<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 : SE ORIECO</p> <p>HOLE TYPE : DIAMOND</p> <p style="text-align: center;">**COLLAR COORDINATES AND RL**</p> <p>SURVEYED:</p> <p>AMG 5413360N 601250E 120RL</p> <p>PRE-COLLAR DEPTH NIL</p> <p>FINAL DEPTH 116.50</p> <p>PURPOSE OF HOLE : Exploration</p> <p>HOLE STATUS : Complete</p> <p>COMMENTS : Testing gossan outcrop</p> <p>SURVEY DATA</p> <table border="0"> <tr> <td>Survey Method:</td> <td colspan="3">Eastman Single Shot</td> </tr> <tr> <td>Depth</td> <td>Azimuth</td> <td colspan="2">Inclination</td> </tr> <tr> <td>30.5</td> <td>320</td> <td colspan="2">50</td> </tr> <tr> <td>116.5</td> <td>317</td> <td colspan="2">53</td> </tr> </table> <p>SUMMARY LOG</p> <p>0.00-99.80m Quartz Sandstone</p> <p>99.80-116.50m Interbedded Quartz Sandstone and Siltstone</p>	Survey Method:	Eastman Single Shot			Depth	Azimuth	Inclination		30.5	320	50		116.5	317	53		<p style="text-align: center;">** DRILLING SUMMARY**</p> <p>DIAMOND 116.50 BQTK</p> <p>Drilling Contractor : LIDDS</p> <p>Drill Rig: : Gopher 28</p> <p>Date Started : 28 February 1999</p> <p>Date Completed : 7 March 1999</p> <p>Logged By : AG</p> <p>Sampled By : AG</p> <p>Material Left in Hole : NIL</p> <p>Base of Complete Oxidation : 59.80m</p> <p>Top of Fresh Rock : 103.80m</p> <p>Water First Encountered : NIL</p> <p>Water Inflow Estimate : NIL</p> <p>SIGNIFICANT ASSAYS</p> <p style="text-align: right;">NIL</p>
Survey Method:	Eastman Single Shot																
Depth	Azimuth	Inclination															
30.5	320	50															
116.5	317	53															

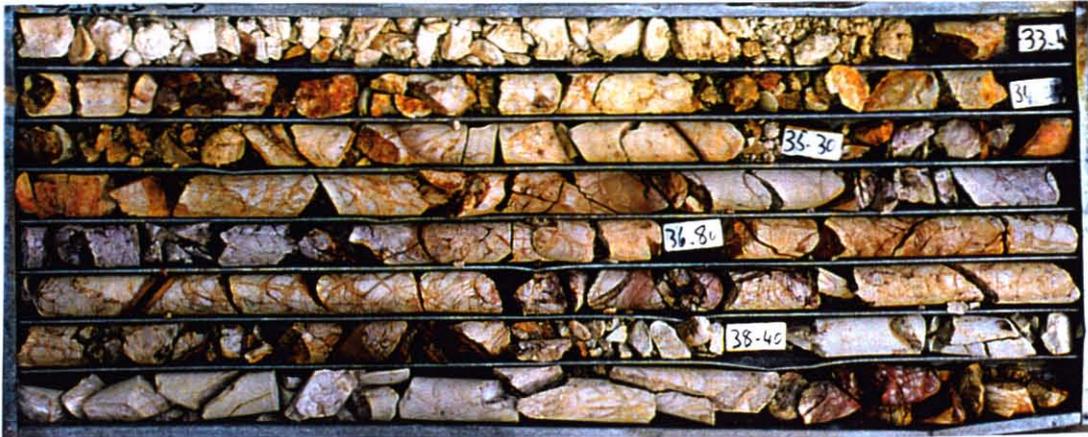
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## DIAMOND DRILL LOG

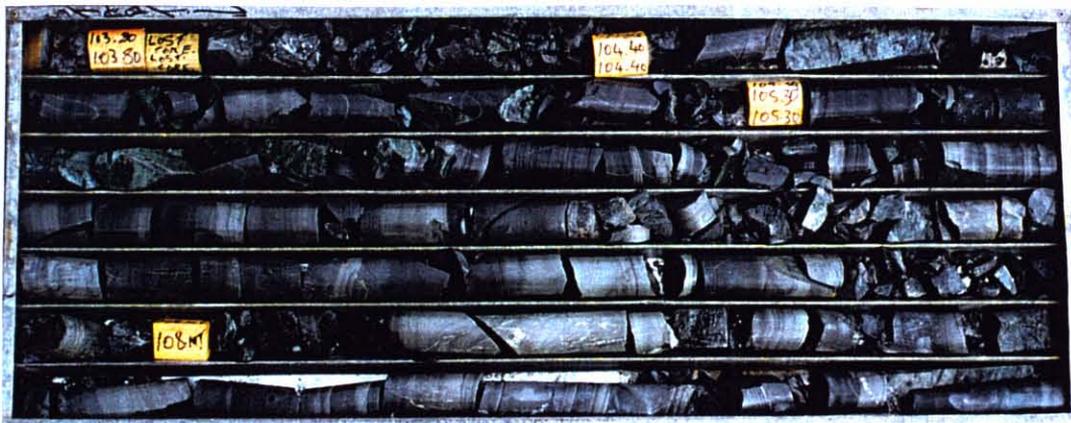
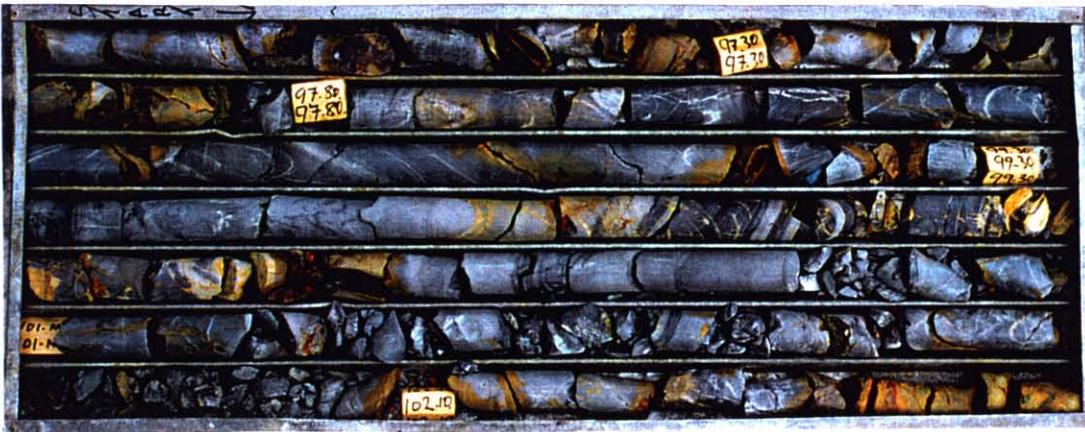
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FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
0.00	99.80	<p>QUARTZ SANDSTONE</p> <p>Tan to pale gray coloured, fine to medium grained massive quartz sandstone. The sandstone is strongly oxidised down to 59.80m depth with strong to intense ferric oxides developed either pervasively through out the core or preferentially along fracture/joint planes. Oxides developed along the joint/fracure planes may be after fine grained sulphides/pyrite. From 59.80 to 103.80m the intensity of oxidation decreases. The quartz sandstone is massive in structure with no significant mineralisation</p>			
99.80	116.50	<p>INTERBEDDED QUARTZ SANDSTONE AND SILTSTONES</p> <p>Gray, fine grained interbedded quartz sandstone and siltstone exhibiting repetitive fining upward cycles. The basal sandstone units are typically gray in colour, massive, fine to medium grained and grade upwards into gray to black coloured, massive to bedded siltstones. Sedimentary structures developed include planar bedding, cross bedding and small scale slump structures. No significant mineralisation was observed within the drill hole.</p> <p>END OF HOLE 116.50 METRES</p>			



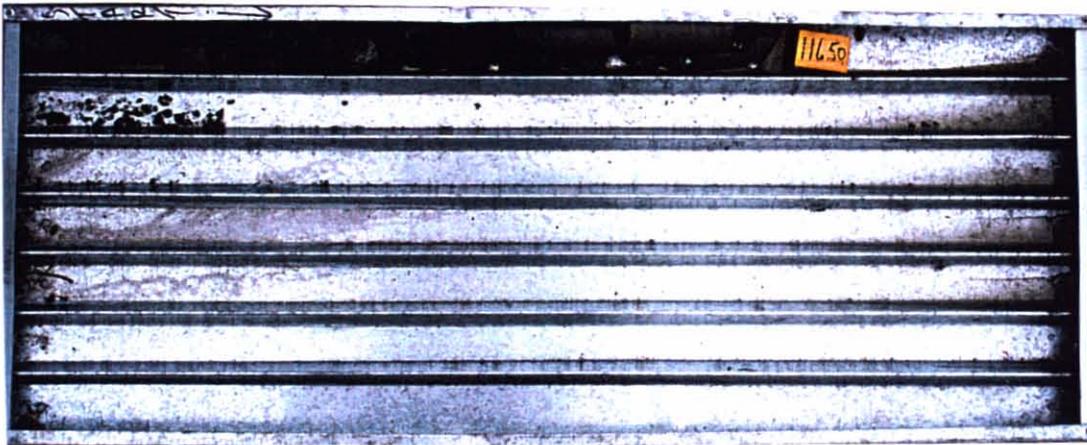






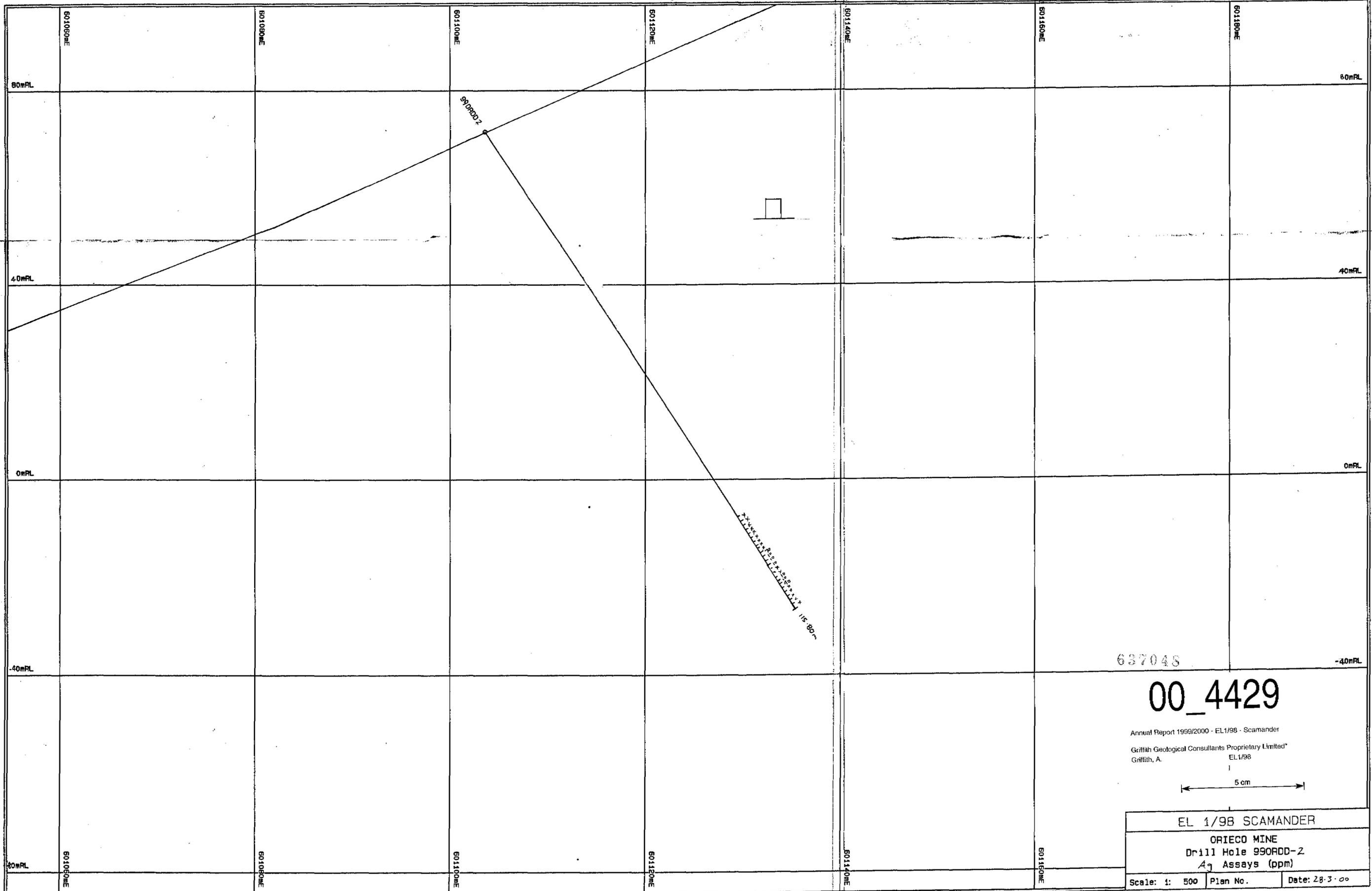
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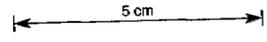
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**PLAN SUPPLEMENT**



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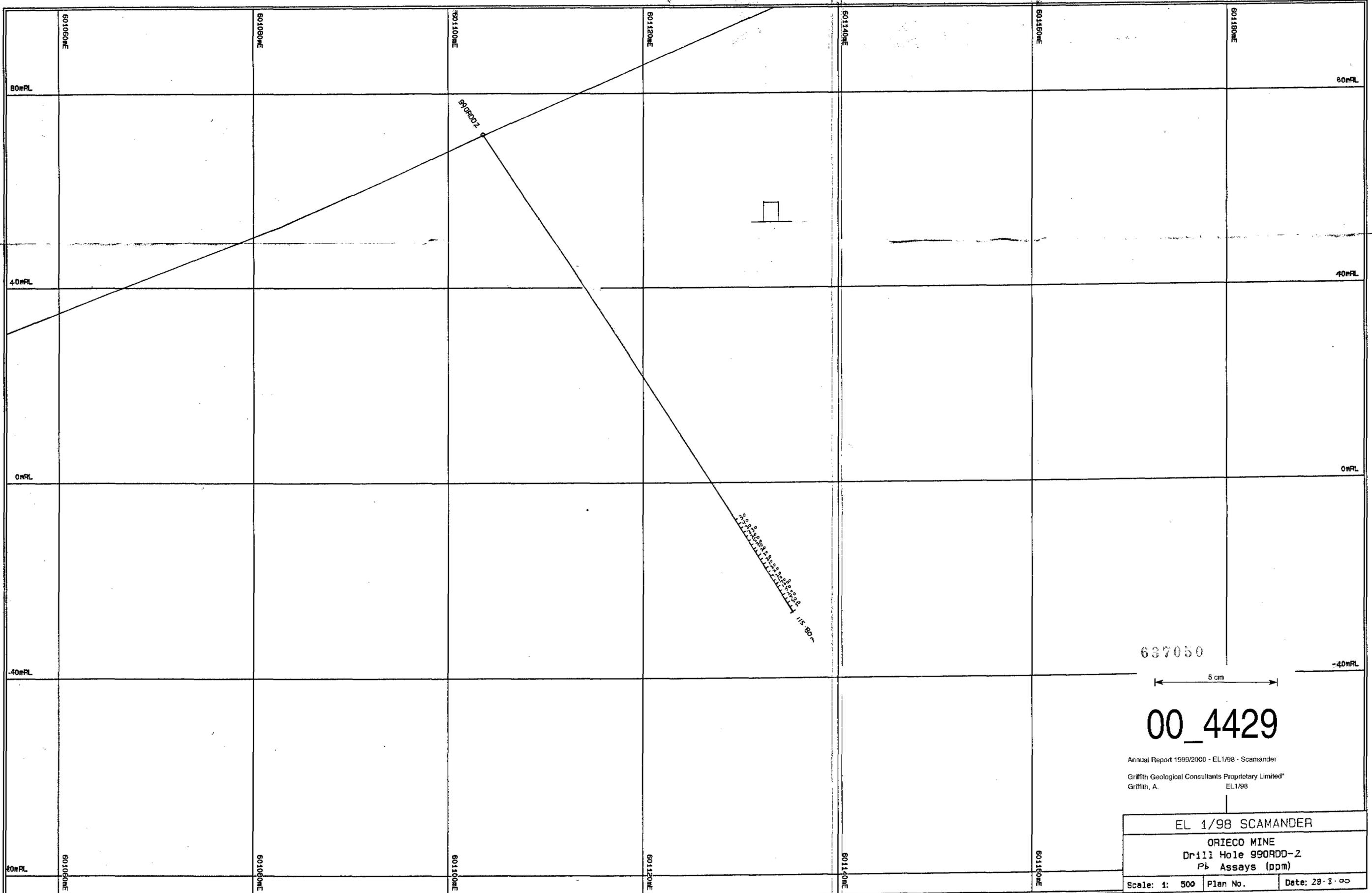
Annual Report 1999/2000 - EL1/98 - Scamander  
 Griffith Geological Consultants Proprietary Limited\*  
 Griffith, A. EL1/98



EL 1/98 SCAMANDER		
ORIECO MINE		
Drill Hole 990RDD-2		
Ag Assays (ppm)		
Scale: 1: 500	Plan No.	Date: 28.3.00

jd.p10108



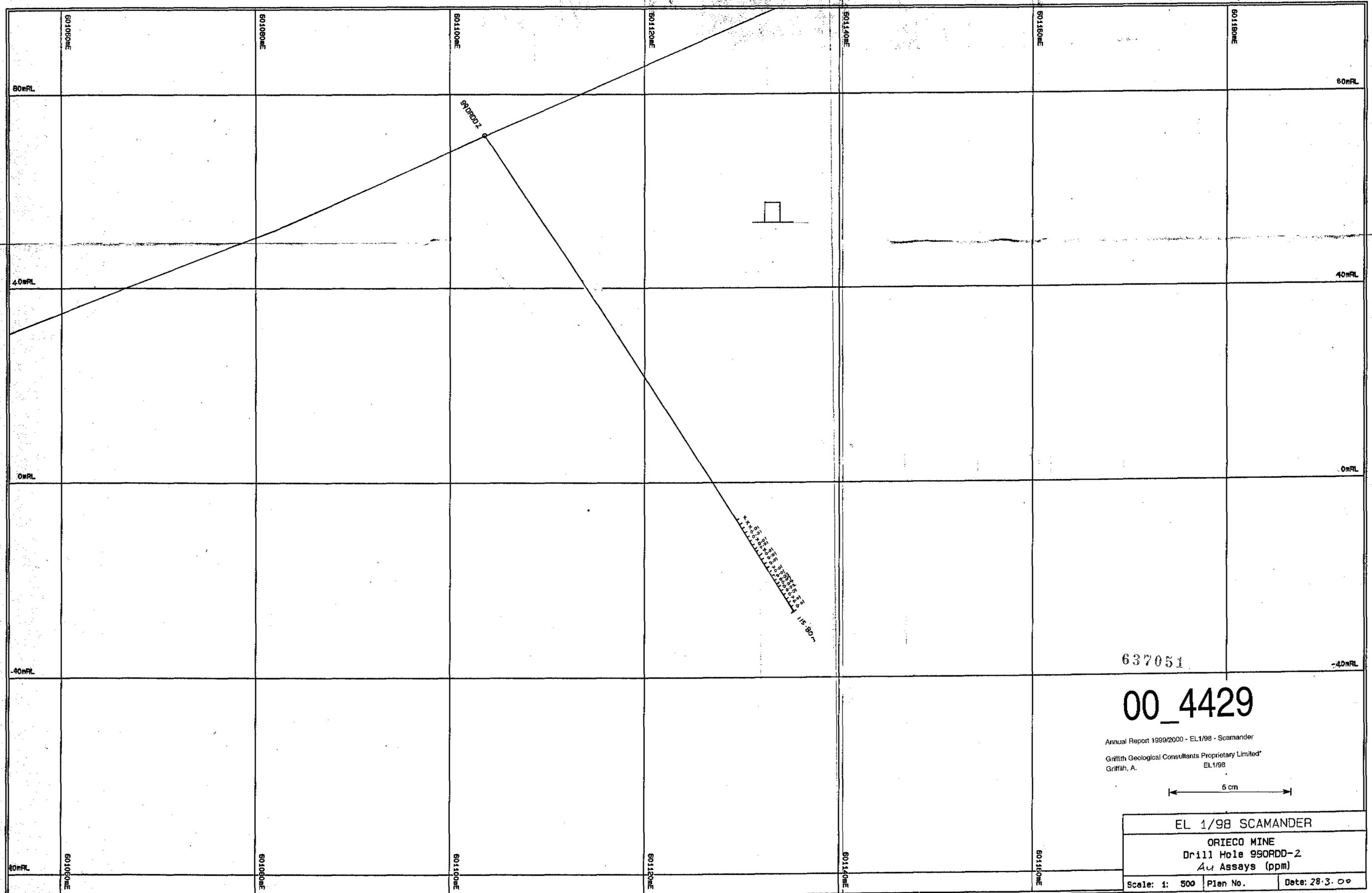


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 Griffith Geological Consultants Proprietary Limited\*  
 Griffith, A. EL1/98

EL 1/98 SCAMANDER		
ORIECO MINE		
Drill Hole 990RDO-2		
Pb Assays (ppm)		
Scale: 1: 500	Plan No.	Date: 28.3.00



637051

**00\_4429**

Annual Report 1999/2000 - EL1/98 - Scamander  
 Griffith Geological Consultants Proprietary Limited\*  
 Griffith, A. EL1/98

5 cm

EL 1/98 SCAMANDER		
ORIECO MINE		
Drill Hole 99ORDD-2		
Au Assays (ppm)		
Scale: 1: 500	Plan No.	Date: 28.3.00

601050ME

601050ME

601050ME

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601050ME

601050ME

601050ME

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40mRL

0mRL

-40mRL

60mRL

60mRL

60mRL

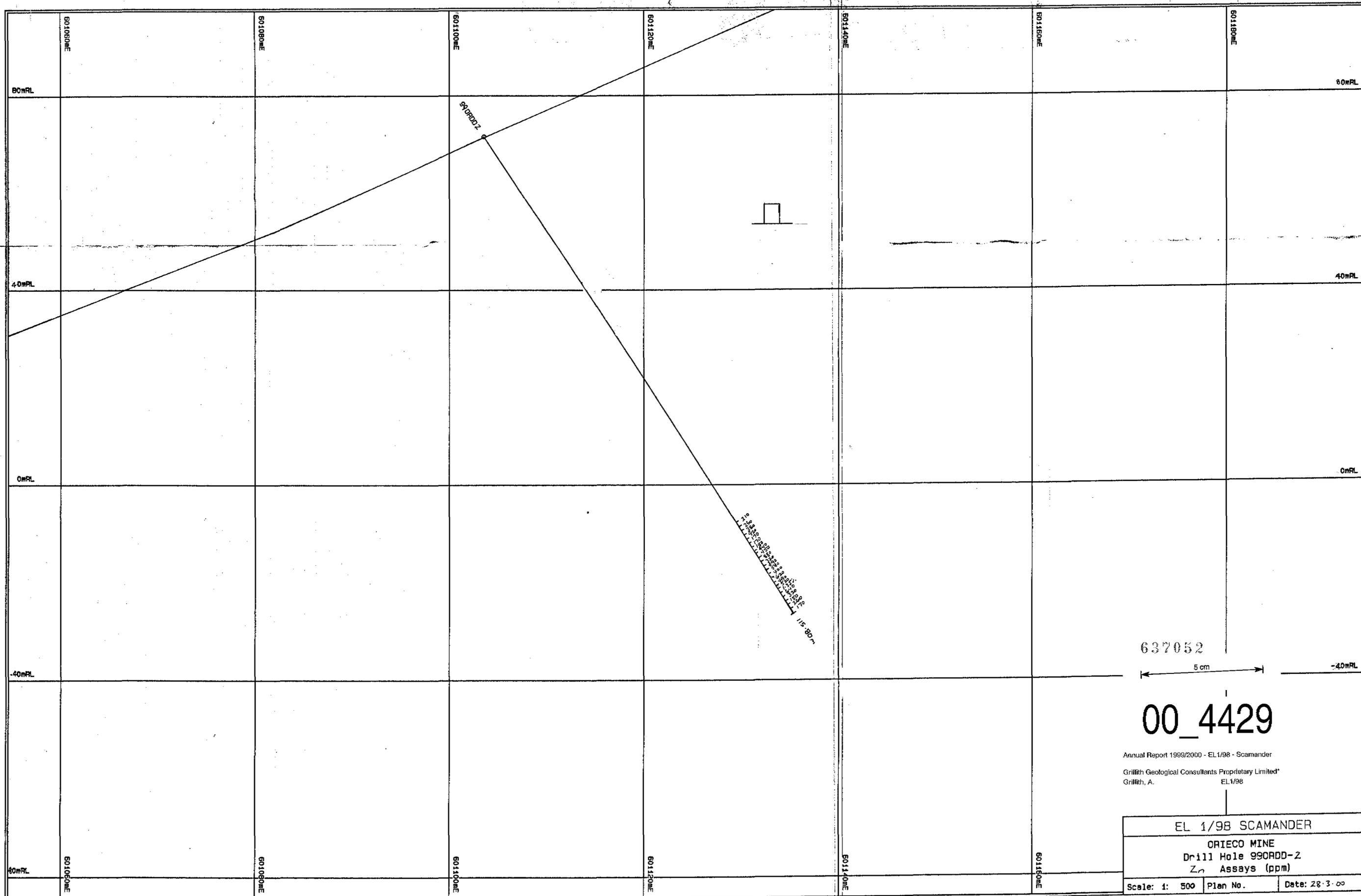
40mRL

0mRL

-40mRL

99ORDD-2

99ORDD-2  
 1/5-80



990RDD-2

990RDD-2  
 115.80m

637052

5 cm

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 Griffith Geological Consultants Proprietary Limited\*  
 Griffith, A. EL1/98

EL 1/98 SCAMANDER		
ORIECO MINE		
Drill Hole 990RDD-2		
Zn Assays (ppm)		
Scale: 1: 500	Plan No.	Date: 28.3.00

1st print