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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

MINERAL RESOURCES DIVISION

**OPEN FILE**

EXPLORATION LICENCE NO 4/73 - STERLING VALLEY

ANNUAL REPORT ON EXPLORATION ACTIVITY

7 MARCH 1986 TO 6 MARCH 1987

EZ REPORT NO T223

<b>MINES</b>	
File Ref.	
- 9 MAR 1987	
Exec. Ref.	
Approved Officer Initials	
Reported to	Date

S TAYLOR  
MARCH 1987

**ENCLOSURE**

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Treatability of Sterling Valley Arseno-  
pyrite - EZ West Coast Mines

*held in closed file*

PLANS

Fig 1 Henty Fault Zone 1:10,000  
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## 1 INTRODUCTION

This report summarizes work undertaken in EL 4/73, initially by Electrolytic Zinc Company of Australasia Limited in the period March 1986 - October 1986, then by Billiton Australia, on behalf of the EZ-Billiton Joint Venture, in the period November 1986 - March 1987. Billiton, who farmed-in to the EL in November 1986. is currently manager of the project.

## 2 PREVIOUS EXPLORATION

Previous exploration within EL 4/73 is documented in EZ Report Nos 133 (1980), 143 (1981), 146 (1981), 150 (1982), 154 (1982), 161 (1983), 167 (1983), T181 (1984), T202 (1985) and T214 (1986).

## 3 EXPLORATION ACTIVITY 7 MARCH 1986 TO 6 MARCH 1987

The following work was undertaken in the period under review.

- \* Arsenic-rich sections of drill core from the area of significant arsenopyrite mineralization on the Henty Fault Zone in the NW corner of the EL, were sampled and submitted to EZ West Coast Mines Metallurgical Dept for flotation testwork.
- \* Billiton commenced a comprehensive programme of core sampling and relogging of drill holes adjacent to the Henty Fault Zone to investigate its gold potential. By March 1987 a total of 122 samples from holes SV1, STP232-A-1 and STP234 (fig 1) had been analysed for gold by fire assay.
- \* Billiton collected a total of nine grab samples from the access track to hole STP283 (3) and from the dumps at the Sterling Valley (Pb-Ag) Mine (6). These were analysed for Cu, Pb, Zn, Ag, Bi, Mn, As, Sn, Mo, W and Au.

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- \* As part of an AMIRA project on gold mineralization along the Henty Fault Zone, I Gordon (University of Tasmania) collected twelve grab samples from various parts of the EL, as shown in fig 2. These were analysed for Cu, Pb, Zn, Ag, Bi, As, Au and Sn.

#### 4 RESULTS RECEIVED 7 MARCH 1986 TO 6 MARCH 1987

##### Metallurgical Testwork

The testwork conducted by EZ West Coast Mines Metallurgical Dept (Appendix 1) indicates that the arsenopyrite-rich lodes on the Henty Fault Zone respond well to the flotation process.

##### Drill Core Sampling

Results received for SV1 (52.0-146.0 m), STP234 (275-342.5 m) and STP232-A-1 (63-131.3 m) contained no significant gold values, as shown in Tables 1, 2 and 3 respectively. Maximum values obtained were 0.15 g/t Au at 95-96 m in SV1, 0.008 g/t Au at 289-291 m in STP234 and 0.23 g/t Au at 66.9-68.2 m in STP232-A-1.

##### Rock Sampling

Three chip samples of andesites with quartz veining and sulphides on the track to STP283 (Table 4) returned a maximum value of only 0.08 g/t Au.

Six grab samples from the dumps of the Sterling Valley Mine returned four values >1 g/t Au, the maximum being 6.2 g/t Au (Table 4).

Twelve rock chip samples taken by I Gordon (Table 5) returned only one significant gold value, of 5.8 g/t, from the Sterling Valley Mine Dump.

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5 PROPOSED WORK 1987/88

Billiton's comprehensive programme of drillcore reassaying and relogging plus detailed review of geophysical/geological/ structural aspects of the Henty Fault Zone was in progress at the end of the year under review. Areas of gold potential along the fault, identified in this review, will be drill tested in the first half of 1987.

SILMET SYSTEM  
METRIC  
DECIMAL POINTS AS REQUIRED

NOTE: Au by 30gm fire assay, Analabs Perth 1987  
Sn, Cu, Pb, Zn by Admin Lab, Cleveland 1977

The Shell Company of Australia Limited  
METALS DIVISION  
DRILL LOG SHEET  
CONTINUATION SHEET

PROJECT STERLING VALLEY HOLE NAME SV 1  
LOGGED BY D.C. SIMPSON, COMINCO TOTAL DEPTH 150.0m  
MAY 1977

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Table 1

DISTANCE FROM COLLAR		Au ppm	Sn %	Cu %	Pb %	Zn %	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
TO TOP	TO BOTTOM												
													0-4.0m: Not cored
													4.0-5.5m: QUARTZ-SERICITE SCHIST Probably of Kiffers origin. Water-worn pebbles 0-50mm
													5.5-18.4m: INTERBEDDED SANDSTONES AND SHALES Sandstone is fine to medium grained, often spinitic and locally containing minor carbonate as dissemination and veinlets. Shales grey to black phyllitic in part. Graphite developed on some planes.
													18.4-20.0m: QUARTZ VEIN With wallrock fragments (sst) and minor carbonate.
													20.0-43.1m: INTERBEDDED SANDSTONES AND SHALES Sandstone predominates. Some of the sandstones, eg: 32-35m, contain abundant carbonate (calcite or siderite), disseminated. Fractures @ 65° to bedding and 40° to core axis, contain calcite and possibly fine grained green ferromagnesian. Occ specks of pyrite seen on fractures. Graphite is common on shale cleavage. Occ veins, with matrix = 1mm quartz silt, occur in sandstones. Core bedding angle 60-80°.
													43.1-45.0m: QUARTZ VEIN Similar to above quartz vein and walls irregular.
													45.0-51.5m: INTERBEDDED SANDSTONES AND SHALES As for 20-43.1m except less carbonate.
													51.5-99.8m: GREY SHALES WITH INTERBEDDED SILTSTONES AND CARBONATE BEDS Medium grey shale showing strong gneissic cleavage. Minor siltstone is evident in parts. Some carbonate is in the form of beds - either as veins often associated with quartz. Core bedding angle averages 70° although local variations occur. Minor dissemin py & trace vein py around 95m.
													99.8-150.0m: QUARTZ-SERICITE SCHIST Light grey to pale grey, foliated rock showing considerable tectonic metamorphic effect, eg: rock particles are deformed to be up to 30 times as long as they are thick. Some sections are shaly eg: approx 112m. Quartz fragments constitute ~10% of total rock - they are equiaxed and angular. Feldspar fragments are characterized by diffuse green leucophares. Bedding where visible is parallel to schistosity.
52.0	53.0	<0.001	0.04	0.04	0.01	0.05	138209						
53.0	54.0	<0.001	0.01	0.12	0.01	0.05	138210						
54.0	55.0	<0.001	0.01	0.10	0.01	0.02	138211						
55.0	56.0	<0.001	0.01	0.08	<0.01	0.01	138212						
56.0	57.0	<0.001	0.02	0.12	0.01	0.12	138213						
57.0	58.0	<0.001	0.02	0.14	0.01	0.06	138214						
58.0	59.0	<0.001	0.02	0.12	<0.01	0.01	138215						
59.0	60.0	<0.001	0.02	0.16	<0.01	0.01	138216						
60.0	61.0	<0.001	0.02	0.10	<0.01	0.01	138217						
61.0	62.0	<0.001	0.02	0.10	<0.01	0.01	138218						
62.0	63.0	<0.001	0.02	0.10	0.01	0.01	138219						
63.0	64.0	<0.001	0.03	0.12	<0.01	0.01	138220						
64.0	65.0	<0.001	0.03	0.08	<0.01	0.01	138221						
65.0	66.0	<0.001	0.04	0.08	<0.01	0.01	138222						
66.0	67.0	<0.001	0.05	0.20	<0.01	0.01	138223						
67.0	68.0	0.025	0.04	0.10	0.01	0.01	138224						
68.0	69.0	0.025	0.20	0.10	<0.01	0.01	138225						
69.0	70.0	0.001	0.02	0.18	0.02	0.12	138226						
70.0	71.0	0.001	0.02	0.14	0.01	0.11	138227						
71.0	72.0	0.001	0.02	0.06	0.01	0.10	138228						

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SMLMET SYSTEM  
METRIC  
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited  
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SV 1
LOGGED BY	D.C. SIMPSON, COMMO	TOTAL DEPTH	150m

MAY 1977

006

DISTANCE FROM COLLAR		Au ppm	Sn %	Cu %	Pb %	Zn %	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
TO TOP	TO BOTTOM												
72.0	73.0	<0.008	0.01	0.04	<0.01	0.03	138229						
73.0	74.0	<0.008	0.01	0.10	0.01	0.02	138230						
74.0	75.0	0.017	0.02	0.16	0.01	0.13	138231						
75.0	76.0	0.008	0.01	0.14	0.01	0.13	138232						
76.0	77.0	0.008	0.01	0.16	0.02	0.12	138233						
77.0	78.0	<0.008	0.01	0.12	<0.01	0.04	138234						
78.0	79.0	<0.008	0.01	0.14	<0.01	0.03	138235						
79.0	80.0	<0.008	0.01	0.12	<0.01	0.05	138236						
80.0	81.0	0.067	0.01	0.14	<0.01	0.03	138237						
81.0	82.0	0.032	0.01	0.16	<0.01	0.03	138238						
82.0	83.0	0.017	0.01	0.18	<0.01	0.02	138239						
83.0	84.0	<0.008	0.01	0.14	<0.01	0.02	138240						
84.0	85.0	<0.008	0.01	0.14	<0.01	0.03	138241						
85.0	86.0	<0.008	0.01	0.14	0.07	0.10	138242						
86.0	87.0	<0.008	0.01	0.10	0.01	0.05	138243						
87.0	88.0	0.025	0.02	0.14	0.01	0.04	138244						
88.0	89.0	0.025	0.02	0.14	<0.01	0.03	138245						
89.0	90.0	<0.008	0.02	0.10	0.04	0.09	138246						
90.0	91.0	<0.008	0.01	0.14	0.02	0.04	138247						
91.0	92.0	<0.008	0.02	0.14	0.01	0.03	138248						
92.0	93.0	0.025	0.02	0.12	<0.01	0.01	138249						
93.0	94.0	0.008	0.02	0.10	0.01	0.02	138250						
94.0	95.0	<0.008	0.02	0.12	0.01	0.01	138251						
95.0	96.0	0.150	0.02	0.12	0.01	0.02	138252						
96.0	97.0	0.017	0.05	0.10	<0.01	0.01	138253						
97.0	98.0	0.040	0.02	0.04	0.01	0.01	138254						
98.0	99.0	<0.008	0.01	0.04	0.01	0.01	138255						
99.0	99.8	<0.008	0.01	0.02	<0.01	0.01	138256						
99.8	105.0												
105.0	106.0	<0.008	0.01	0.02	<0.01	0.01	138257						
106.0	111.0												
111.0	111.1	<0.008	0.01	0.02	0.01	0.01	138258						
111.1	111.5												
111.5	111.6	<0.008	0.01	0.02	0.01	0.01	138259						
111.6	120.0												
120.0	121.0	<0.008	0.02	0.02	0.01	0.02	138260						
121.0	125.0												
125.0	126.0	<0.008	0.01	0.02	<0.01	0.01	138261						
126.0	130.0												
130.0	131.0	<0.008	0.01	0.02	<0.01	<0.01	138262						
131.0	135.0												
135.0	136.0	<0.008	0.01	0.02	0.01	<0.01	138263						
136.0	140.0												
140.0	141.0	<0.008	0.02	0.02	0.01	0.01	138264						
141.0	145.0												
145.0	146.0	<0.008	0.01	0.02	<0.01	0.01	138265						

at 70 to 80° to core axis  
Up to 10% carbonate is developed locally - this  
appears to be calcite or siderite  
blasts and/or carbonate veins developed locally  
- minor sulphide alteration is evident as slight  
silicification, these veinlets cut across foliation at  
angles up to 45°  
Schist is assumed to be derived from vitric tuffs -  
see thin section report  
Rare py, po disseminated throughout also occ py veins  
up to 5mm. V rare ga specks in veinlets  
2mm vein of sp @ 121m

END OF HOLE

945007

BHMET SYSTEM  
METRIC  
DECIMAL POINTS AS REQUIRED

GOLD ASSAYS IN PPM  
BY 30gm FIRE ASSAY AT ANALABS, PERTH.

The Shell Company of Australia Limited  
METALS DIVISION  
DRILL LOG SHEET

PROJECT **STERLING VALLEY** HOLE NAME **STP 234**  
LOGGED BY **R.A. SAINTY, EZ, 1981** TOTAL DEPTH **342.5m**  
SAMPLED BY: **J.G. PARVIS, 1986**

DISTANCE FROM COLLAR				Au	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
TO TOP	TO BOTTOM	TO TOP	TO BOTTOM								
275.00	277.00	<0.008		13445							FOR GEOLOGY SEE ORIGINAL EZ LOG SPLIT CORE
277.00	279.00	<0.008		13446							
279.00	281.00	<0.008		13447							
281.00	283.00	<0.008		13448							
283.00	285.00	<0.008		13449							
285.00	287.00	<0.008		13450							
287.00	289.00	<0.008		13451							
289.00	291.00	<0.008		13452							
291.00	293.00	<0.008		13453							
293.00	295.00	<0.008		13454							
295.00	297.00	<0.008		13455							
297.00	299.00	<0.008		13456							
299.00	301.00	<0.008		13457							
301.00	303.00	<0.008		13458							
303.00	305.00	<0.008		13459							
305.00	321.50	<0.008									
321.50	323.00	<0.008		13460							
323.00	325.00	<0.008		13461							
325.00	327.00	<0.008		13462							
327.00	329.00	<0.008		13463							
329.00	331.00	<0.008		13464							
331.00	333.00	<0.008		13465							
333.00	335.00	<0.008		13466							
335.00	337.00	<0.008		13467							
337.00	339.00	<0.008		13468							
339.00	341.00	<0.008		13469							
341.00	342.50	<0.008		13470							
END OF HOLE											

Table 2

007

945008

SILMET SYSTEM  
METRIC  
DECIMAL POINTS AS REQUIRED

GOLD ASSAYS IN PPM - 30gm FIRE ASSAY,  
AT ANALABS, PERTH.

The Shell Company of Australia Limited  
METALS DIVISION  
DRILL LOG SHEET  
CONTINUATION SHEET

PROJECT <b>STERLING VALLEY</b>	HOLE NAME <b>STP 232 A-1</b>
LOGGED BY <b>R.A. SAINTY, EZ, 1981</b>	TOTAL DEPTH <b>198.2m</b>
SAMPLED BY: <b>J.G. FURVIS, SHELL, 1986</b>	

DISTANCE FROM COLLAR		Au	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
TD TOP	TD BOTTOM								
63.00	66.90	0.017	13406						FOR GEOLOGICAL LOG SEE EZ LOG.
66.90	68.20	0.233	13407						SPLIT CORE
68.20	69.20	0.017	13408						" "
69.20	71.30	<0.008	13409						" "
71.30	72.30	<0.008	13410						" "
72.30	73.30	0.075	13411						" "
73.30	75.00	0.017	13412						" "
75.00	76.90	0.008	13413						QUARTERED CORE
76.90	78.60	<0.008	13414						" "
78.60	80.30	<0.008	13415						SPLIT CORE
80.30	82.00	<0.008	13416						" "
82.00	84.00	<0.008	13417						" "
84.00	86.00	<0.008	13418						" "
86.00	88.00	0.122	13419						" "
88.00	90.00	<0.008	13420						" "
90.00	92.00	<0.008	13421						" "
92.00	94.00	<0.008	13422						" "
94.00	96.00	<0.008	13423						" "
96.00	97.50	<0.008	13424						" "
97.50	98.90	<0.008	13425						" "
98.90	100.00	0.017	13426						QUARTERED CORE
100.00	101.00	<0.008	13427						SPLIT CORE
101.00	103.00	<0.008	13428						" "
103.00	105.00	<0.008	13429						" "
105.00	107.00	<0.008	13430						" "
107.00	109.00	<0.008	13431						" "
109.00	111.00	0.050	13432						" "
111.00	112.00	0.017	13433						" "
112.00	112.65	0.050	13434						QUARTERED CORE
112.65	114.50	0.044	13435						SPLIT CORE
114.50	116.00	0.008	13436						" "
116.00	118.00	0.025	13437						" "
118.00	120.00	0.040	13438						" "
120.00	122.00	0.008	13439						" "
122.00	124.00	<0.008	13440						" "
124.00	126.00	<0.008	13441						" "
126.00	128.00	<0.008	13442						" "
128.00	130.00	<0.008	13443						" "
130.00	131.30	<0.008	13444						" "

Table 3

008

945009



# SAMPLE RECORD

010

SAMPLE TYPE: ROCK

LOCATION / PROJECT: STERLING VALLEY

SAMPLER: I. GORDON

DATE: SEPT 1986

MAP / PHOTO REF: \_\_\_\_\_

ASSAY LAB: ANALABS

SAMPLE DESPATCH 11555

ASSAY REPORT NOS: 204-0-08-03906

ORDER NO: \_\_\_\_\_

SAMPLE STORAGE: ?

SAMPLE No.	LOCATION (AMG)		INTER'L (m)	ANALYSES										DESCRIPTION
	NORTH	EAST		Cu	Pb	Zn	Ag	Bi	As	As/Zn	AU	Sn		
STV 226	5374100	386100	Grab	10	200	165	<0.5	<10	70	-	0.002	<5	On Anthony Road.	
STV 227	5374600	385900	"	20	555	185	<0.5	10	190	-	0.012	5	On Anthony Road in road south of Tuleh	
STV 228	5374600	385900	"	150	3750	3550	4.0	<10	78	-	0.005	6	Ag/Pb workings	
STV 229	5374350	385700	"	85	3300	860	3.5	10	95	-	0.003	13	On Anthony Road	
STV 230	5374450	385500	"	20	65	70	<0.5	<10	10	-	0.003	20	On Anthony Road	
STV 231	5374450	385500	"	20	70	45	<0.5	<10	6	-	0.004	17	" " "	
STV 243	5375125	385400	"	760	7900	75000	33.5	<10	-	0.09	0.050	10	Thomas blocks working (on EL 1162)	
STV 246	5375225	386000	"	11000	91500	32500	1380.0	20	100	-	0.050	258	Dump at New N <sup>o</sup> 41 Fabrell Mine - Tuleh	
STV 253	5371960	383860	"	1900	83000	31500	183.0	<10	-	15.00	5.830	1080	Sterling Valley Mine dump.	
STV 254	5376500	385700	"	2800	23000	44500	180.0	240	-	0.49	0.142	118	Morckson Mine dump (on EL 1162)	
STV 262	5374350	385700	"	340	725	10500	6.0	10	67	-	0.004	10	On Anthony Road - same location as 2	
STV 263	5374350	385700	"	25	310	115	<0.5	<10	120	-	0.006	6	" " " " "	

REMARKS: GOLD ANALYSED BY 306M FIRE ASSAY WITH CARBON RED FUSION

Table 5

T T C T C

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APPENDIX 1

Metallurgical Testing of arsenopyrite-rich  
mineralization from the Henty Fault Zone  
by EZ West Coast Mines

012

S T E R L I N G     V A L L E Y

PRELIMINARY INVESTIGATION OF THE TREATABILITY  
OF STERLING VALLEY ARSENOPYRITE

22nd July, 1986

IMc/ET

013

1.0

INTRODUCTION

A deposit of arsenopyrite has been found in the Sterling River area near Tullah. The purpose of the following testwork was to gain some idea of the treatability of this ore.

A limited search through the literature yielded three methods by which arsenopyrite could be separated from pyrite:

- (i) In lime media, arsenopyrite is activated by copper and floats to a far greater extent than pyrite.
- (ii) Arsenopyrite is depressed by the addition of lime (4Kg/tonne). But if 4-5Kg/tonne ammonium chloride is added pyrite can be floated.
- (iii) The ore is mixed with sodium sulphide (3-16Kg/tonne), brought into contact with pyrolusite, then floated with the usual sulphide reagents. Pyrite reports to the froth and arsenopyrite remains in the tail.

Note that (ii) and (iii) require a bulk sulphide float before pyrite and arsenopyrite separation.

Because of its simplicity, method (i) was chosen for the initial evaluation tests.

2.0

DISCUSSION

The results for the first four tests were calculated and presented in APPENDIX A, Tables I to IV. These tables were used to generate Tables V to VIII in APPENDIX B, which isolate the effects of laboratory grinding time and xanthate addition. These tables were used to plot the grade-recovery curves which are presented in APPENDIX C, Graphs 1 to 4, which clearly show the effect of increasing xanthate and grinding times on Arsenic and Iron grades and recoveries. Looking at graphs 1 and 2 it can be

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seen that increasing the grinding times from 11 minutes to 20 minutes considerably improved the recovery of both iron and arsenic. The increase has no effect on the iron grade, however the arsenic grades improved. This indicates that more arsenopyrite is floating at the expense of pyrite/pyrrhotite.

Inspection of graphs 3 and 4 reveal that increasing the xanthate addition from 80g/t to 120g/t caused a deterioration of the grade-recovery relationship for arsenic in iron.

Pure arsenopyrite has a theoretical arsenic content of 46%. The best result obtained, 14.8%, was the 1.5 minute concentrate using 80g/t of SIPX and 20 minutes grinding time (APPENDIX A, Table IV) was far below the theoretical maximum.

Using 120 g/t of SIPX of 20 minutes grinding time a 5th test was conducted to find out if the arsenic content could be upgraded. A rougher flotation time of 3 minutes was chosen because the arsenic content of material produced after 3 minutes was substantially lower than the feed grade. The rougher concentrate was cleaned for 1 minute. The results of the test are presented in APPENDIX D, Table IX.

The cleaner concentrate was only 13.6% arsenic being produced from a rougher concentrate of 10.5% arsenic.

Pure arsenopyrite has an iron content of 34.3%. The iron values in the test results were much higher because of the presence of pyrite and pyrrhotite, which reported with the arsenopyrite.

In spite of the low upgrading and fairly low recovery, 70.4%, the results are encouraging. The arsenopyrite is responding to flotation. The concentrate grades are influenced by a number of factors. The core may not have been ground fine enough to liberate the arsenopyrite from pyrite/pyrrhotite or from the gangue.

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Operational variables e.g. excessive xanthate can cause unsatisfactory arsenopyrite/pyrite-pyrrhotite selectivity. Even too much air can drastically reduce arsenopyrite/pyrite selectivity. Assuming that the arsenopyrite/pyrite-pyrrhotite are liberated from each other, satisfactory selectivity may be achieved by using less xanthate, less air and longer flotation time and/or deeper froth depths. These changes totally ignore other variables such as changing collectors, frothers and pH.

3.

CONCLUSION

1. Sterling Valley arsenopyrite does respond to the flotation process attempted in this series of tests.
2. More work needs to be done to determine:
  - (i) grind required to achieve liberation from gangue and arsenopyrite liberation from pyrrhotite/pyrite.
  - (ii) process requirements:
    - (a) should the plant be a full flotation circuit. If so the circuit configuration, necessary reagents, pH levels and methods of operation need to be determined.
    - (b) should the plant be a combination gravity, magnetic separation, flotation plant.
      - (i) Gravity - to remove gangue materials from sulphides. This could be an option if the sulphides are not disseminated throughout gangue material.
      - (ii) Magnetic - to separate pyrrhotite.
      - (iii) Flotation - for arsenopyrite-pyrite separation.

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PROCEDURE

1. Drill core obtained from the Sterling Valley was supplied by the geology section.
2. The drill core was mixed and crushed to 100% passing 10 mesh.
3. After further mixing the drill core was mixed into 1Kg lots.
4. The experimental work for the first four tests was in the format of a factorial design:

	SIPX	Grinding Time
Test 1	120	11
Test 2	120	20
Test 3	80	11
Test 4	80	20

The total flotation time was 10 minutes with 2/3 xanthate added at 0 and 1/3 added at the 5 minute mark.

5. In all tests grinding was performed at 60% solids, 500g/t of copper sulphate was added which was conditioned for 5 minutes before flotation commenced. Cresylic acid was the frother.
6. Concentrate samples for each test were taken at the 1.5, 3, 5 and 10 minute mark.
7. A fifth test was performed using the same conditions as test 2, except that a rougher concentrate, which was cleaned for 1 minute, was taken after floating for 3 minutes. A scavenger concentrate was also collected.

017

8. All samples were filtered, dried, weighed and assayed for arsenic and iron.



I. McNamara  
Research Metallurgist

018

TABLE I

120 g/lc SIPX 11 min grind

Products	Weight %	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	5.7	38.7	12.6	9.2	9.7	5.7	38.7	12.6	9.2	9.7
3.0 Min Conc	5.7	43.5	8.2	10.3	6.3	11.3	41.1	10.4	19.4	16.0
5.0 Min Conc	3.2	36.6	6.9	5.0	3.0	14.6	40.1	9.6	24.4	19.1
10 Min Conc	5.4	23.7	6.7	6.0	4.9	20.0	36.5	6.8	30.4	24.0
Tailings	80.0	20.9	7.0	69.6	76.0	100.0	24.0	7.4	100.0	100.0
Head	100.0	24.0	7.4	100.0	100.0					

TABLE II

120 g/lc SIPX 20 min grinding

Products	Weight %	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	31.8	33.7	12.9	49.7	60.3	31.8	33.7	12.9	49.7	60.3
3.0 Min Conc	5.0	41.2	6.2	9.3	4.5	36.8	39.0	12.0	58.0	64.8
5.0 Min Conc	3.2	34.0	5.8	4.3	2.7	39.9	38.6	11.5	62.3	67.5
10 Min Conc	4.1	25.4	4.8	4.3	2.9	44.1	37.4	10.9	66.6	70.4
Tailings	55.9	14.8	3.6	33.4	29.6	100.0	24.8	6.8	100.0	100.0
Head	100.0	24.8	6.8	100.0	100.0					

TABLE III

80 g/lc SIPX 11 min grinding

Products	Weight %	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	22.0	45.9	10.4	37.6	32.9	22.0	45.9	10.4	37.6	32.9
3.0 Min Conc	2.6	37.9	8.2	3.7	3.1	24.7	45.0	10.2	41.3	36.0
5.0 Min Conc	1.9	29.6	7.1	2.1	1.9	26.5	44.0	9.9	43.4	37.9
10 Min Conc	2.7	20.8	5.6	2.1	2.1	29.2	41.9	9.6	45.5	40.0
Tailings	70.8	20.7	5.9	54.5	60.0	100.0	26.9	7.0	100.0	100.0
Head	100.0	26.9	7.0	100.0	100.0					

TABLE IV

80 g/lc SIPX 20 min grinding

Products	Weight %	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	26.4	39.7	14.8	42.2	56.6	26.4	39.7	14.8	42.2	56.6
3.0 Min Conc	4.4	33.0	6.2	6.8	4.0	30.8	39.5	13.6	48.9	60.5
5.0 Min Conc	2.9	30.9	4.1	3.7	1.7	33.7	38.7	12.7	52.6	62.3
10 Min Conc	4.9	27.5	4.3	5.4	3.0	38.6	37.3	11.7	58.0	65.3
Tailings	61.4	17.0	3.9	42.0	34.7	100.0	24.8	6.9	100.0	100.0
Head	100.0	24.8	6.9	100.0	100.0					

TABLE V

11 Min Grind

Products	Weight%	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	13.9	42.8	11.5	25.2	22.0	13.9	42.8	11.5	25.2	22.0
3.0 Min Conc	4.2	38.0	8.2	6.8	4.7	18.1	41.7	10.7	32.0	26.7
5.0 Min Conc	2.6	30.3	7.0	3.3	2.5	20.7	40.3	10.3	35.3	29.2
10 Min Conc	4.1	24.2	6.2	4.2	3.5	24.8	37.6	9.6	39.6	32.7
Tailings	75.2	18.9	6.5	60.4	67.3	100.0	23.5	7.3	100.0	100.0
Head	100.0	23.5	7.3	100.0	100.0					

TABLE VI

20 Min Grind

Products	Weight%	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	29.1	39.2	13.9	46.0	58.4	29.1	39.2	13.9	46.0	58.4
3.0 Min Conc	4.7	39.6	6.2	7.5	4.2	33.8	39.3	12.8	53.5	62.6
5.0 Min Conc	3.1	32.5	5.0	4.1	2.2	36.9	38.7	12.2	57.6	64.8
10 Min Conc	4.5	26.5	4.6	4.8	3.0	41.4	37.4	11.3	62.4	67.8
Tailings	58.6	15.9	3.8	37.6	32.2	100.0	24.8	6.9	100.0	100.0
Head	100.0	24.8	6.9	100.0	100.0					

TABLE VII

120 g/t SIPX

Products	Weight%	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	18.8	38.7	12.8	30.2	35.0	18.8	38.7	12.8	30.2	35.0
3.0 Min Conc	5.4	42.4	7.2	9.5	5.6	24.2	39.5	11.6	39.7	40.6
5.0 Min Conc	3.2	35.3	6.4	4.7	3.0	27.3	39.0	10.9	44.3	43.6
10 Min Conc	4.8	26.1	5.8	5.2	4.0	32.1	37.1	10.2	49.5	47.6
Tailings	67.9	17.9	5.3	50.5	52.4	100.0	24.1	6.9	100.0	100.0
Head	100.0	24.1	6.9	100.0	100.0					

TABLE VIII

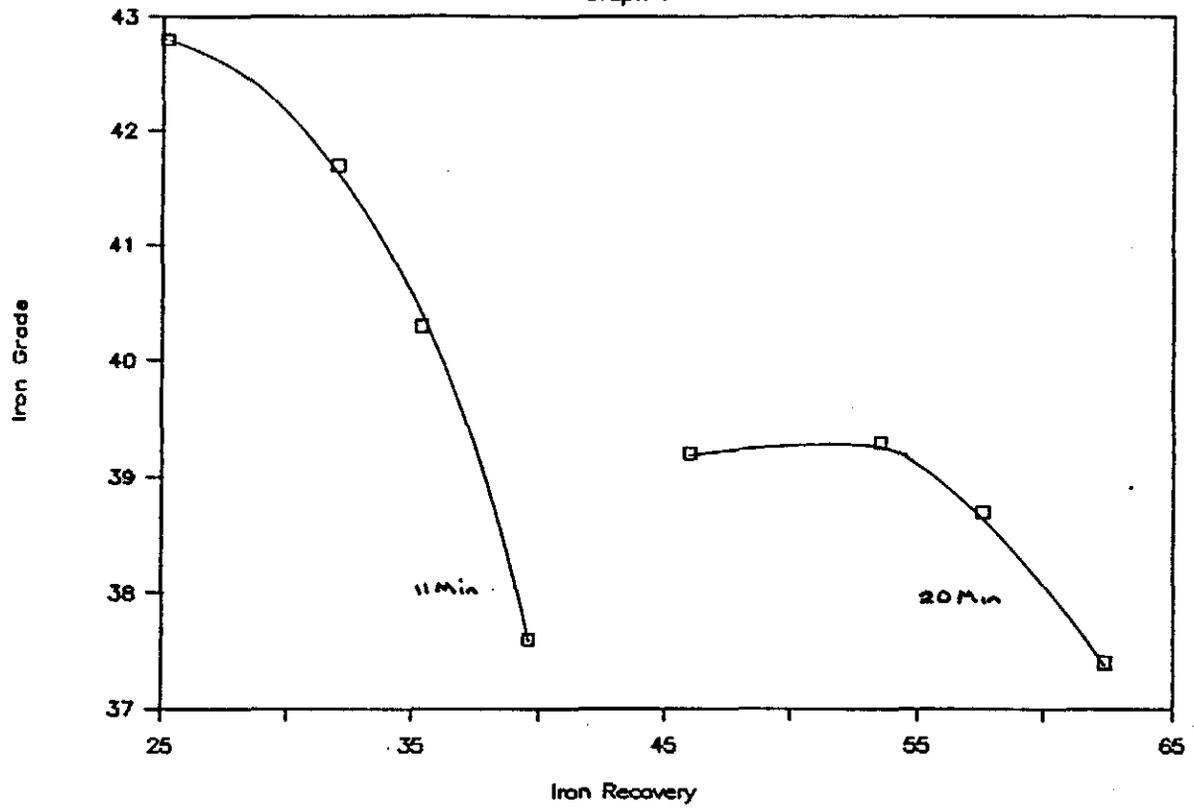
80 g/t SIPX

Products	Weight%	Assay		Recovery		Cum Wt%	Cumulative Assay		Cumulative Recovery	
		Iron	Arsenic	Iron	Arsenic		Iron	Arsenic	Iron	Arsenic
1.5 Min Conc	24.2	42.8	12.6	40.1	44.4	24.2	42.8	12.6	40.1	44.4
3.0 Min Conc	3.5	38.0	7.2	5.1	3.7	27.7	42.2	11.9	45.3	48.1
5.0 Min Conc	2.4	30.3	5.6	2.8	2.0	30.1	41.2	11.4	48.1	50.0
10 Min Conc	3.8	24.2	5.0	3.6	2.8	33.9	39.3	10.7	51.6	52.8
Tailings	66.1	18.9	4.9	48.4	47.2	100.0	25.8	6.9	100.0	100.0
Head	100.0	25.8	6.9	100.0	100.0					

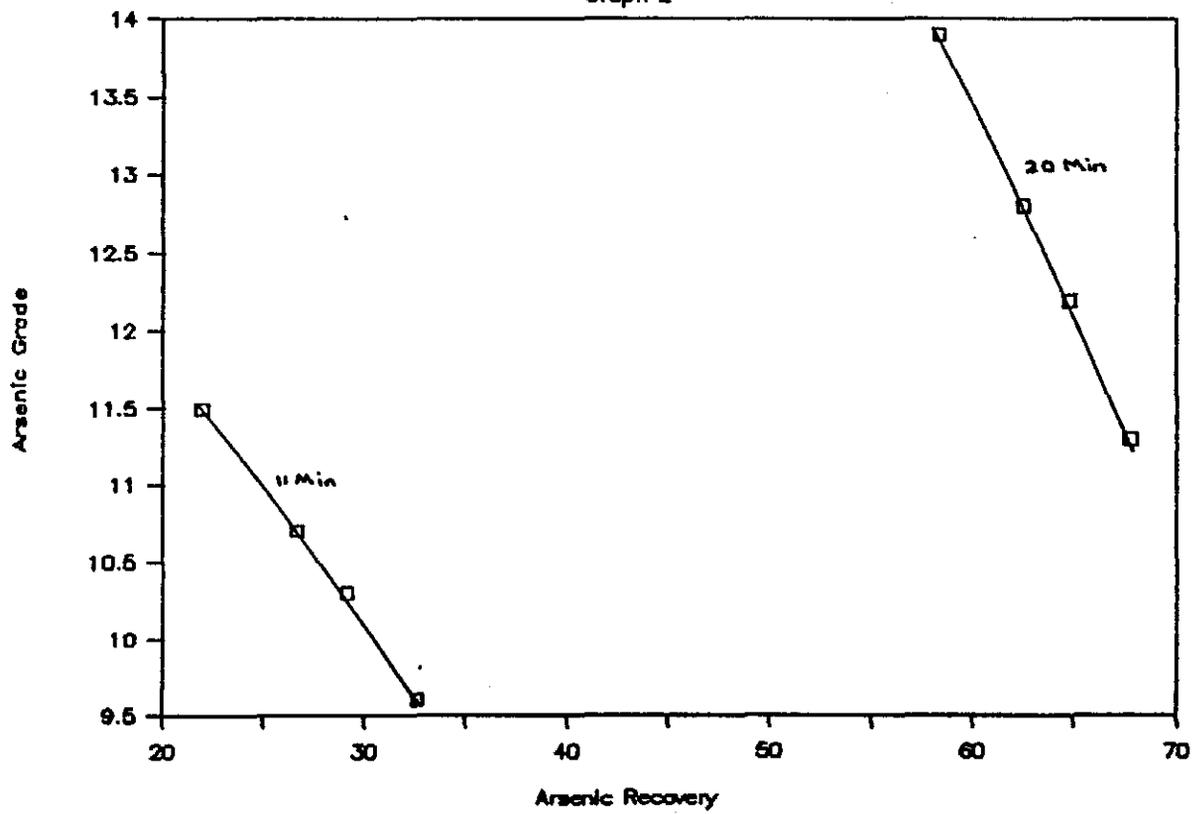
020

### GRINDING

Graph 1

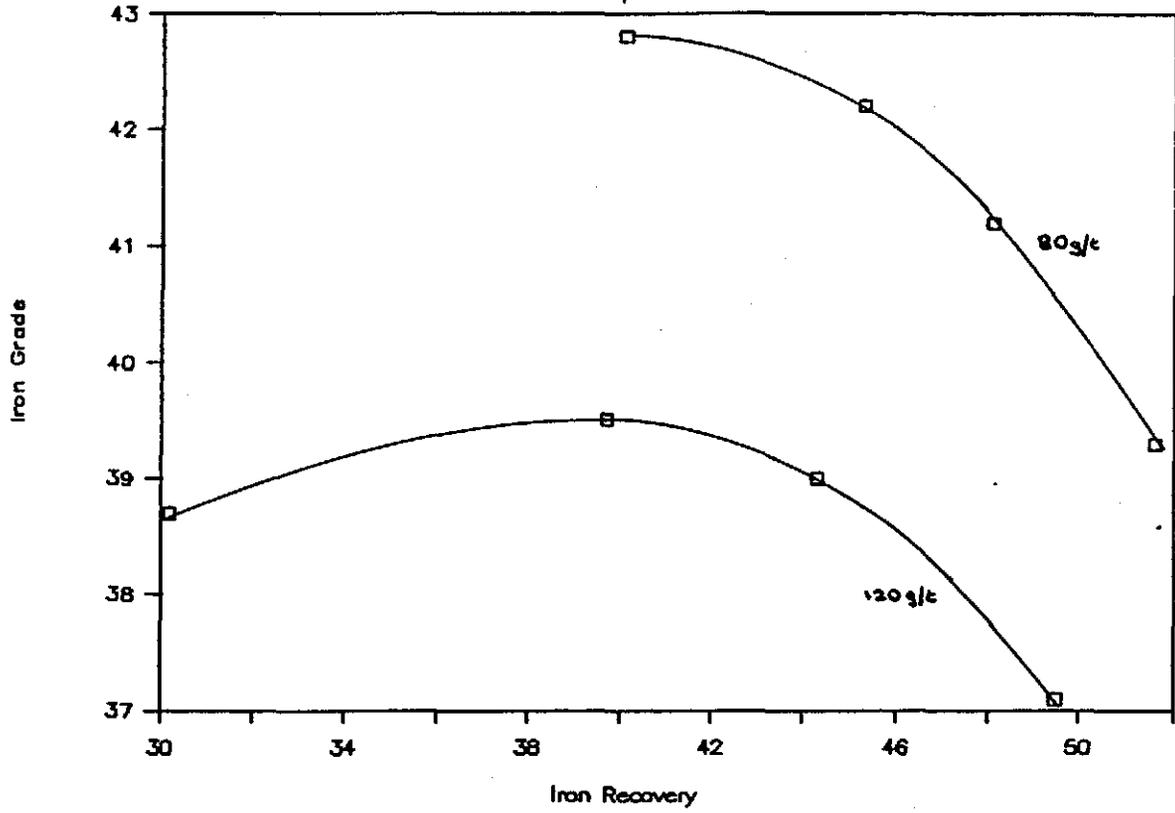


Graph 2

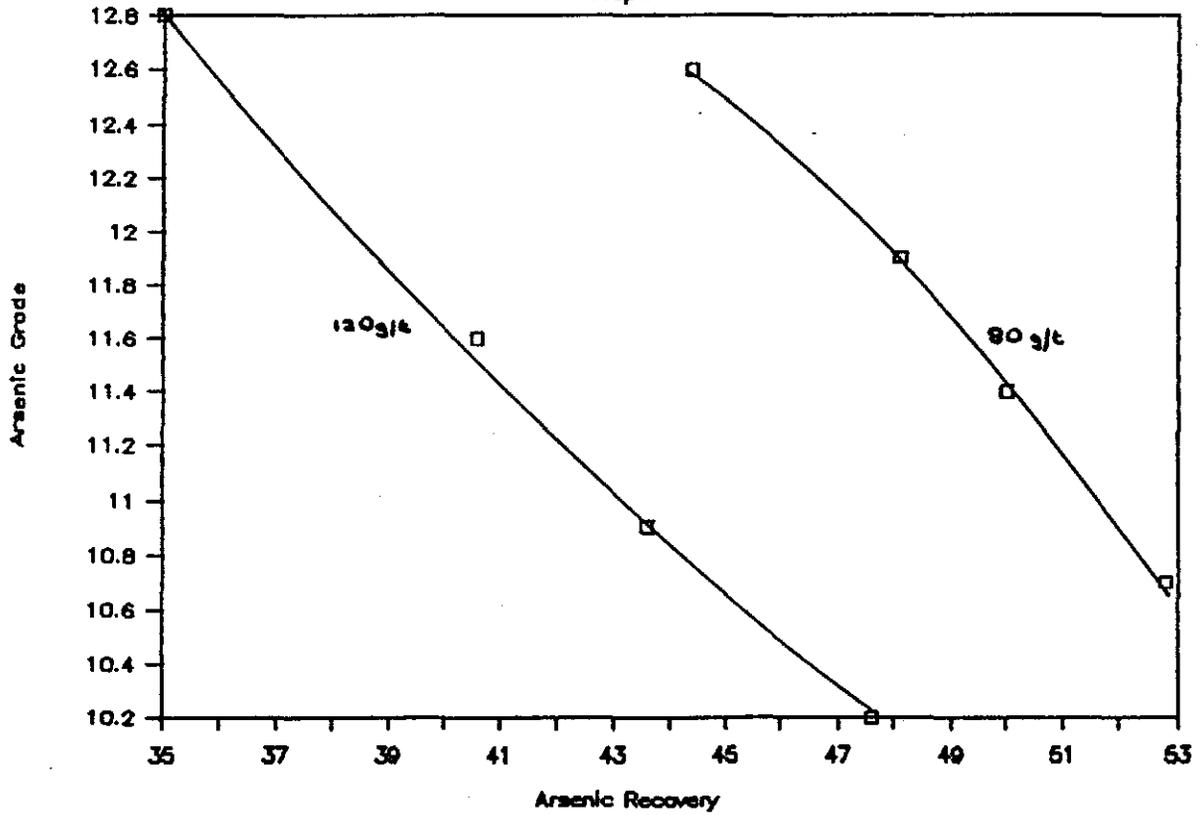


### XANTHATE (S.I.P.X.)

Graph 3



Graph 4

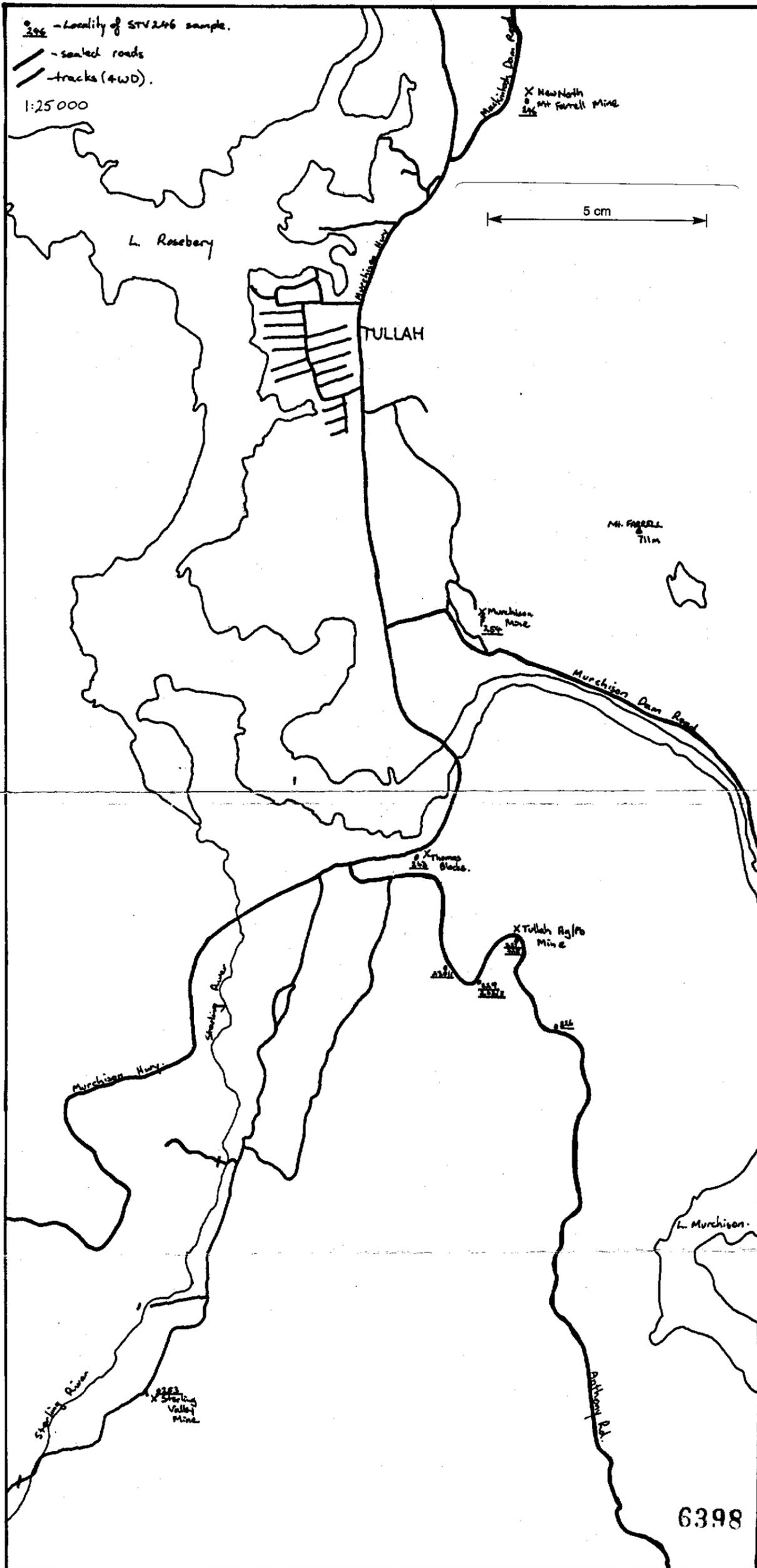


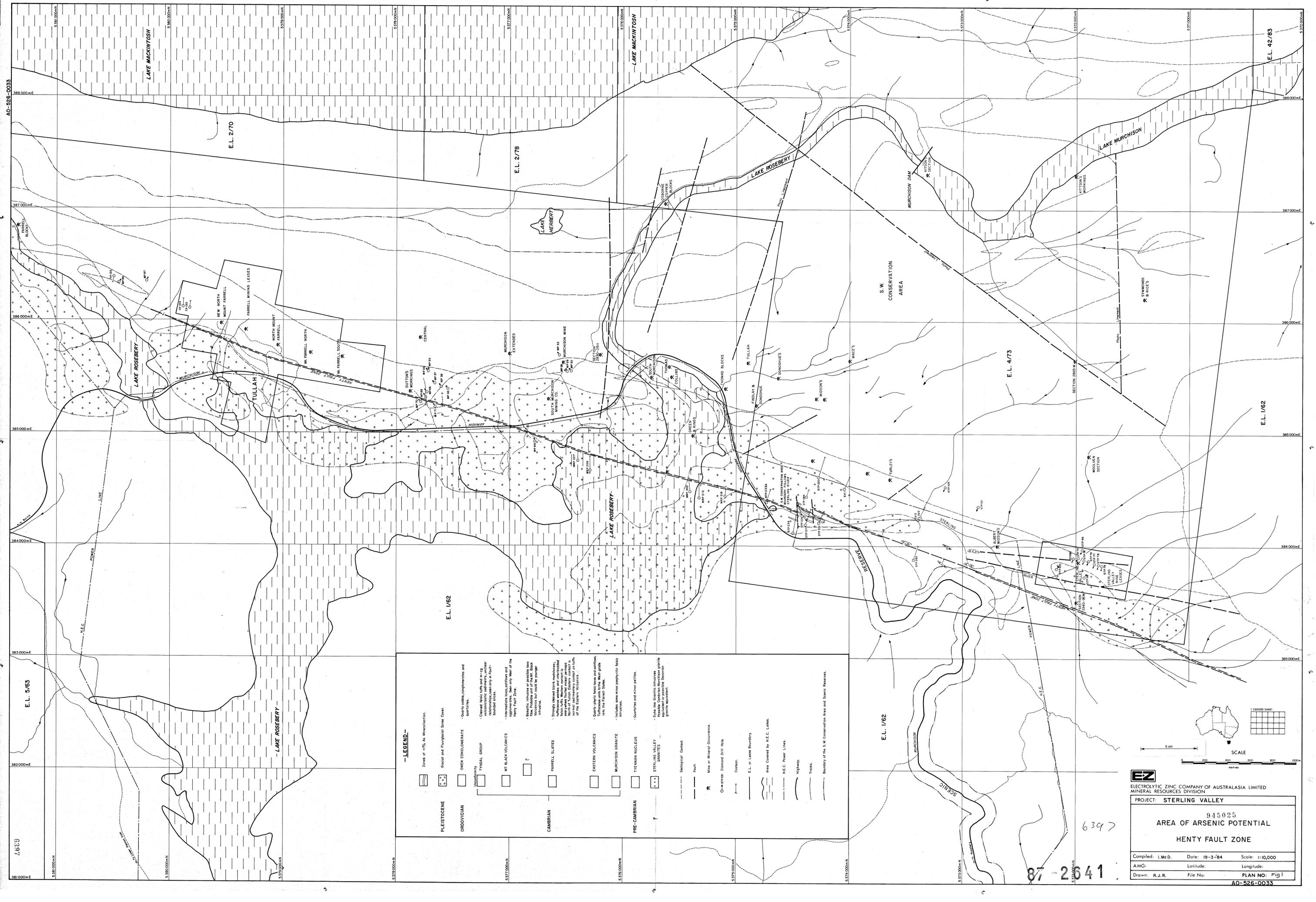
022

PRODUCT	WEIGHT %	ASSAY		RECOVERY	
		Iron	Arsenic	Iron	Arsenic
1st CL Conc	11.7	47.6	13.6	20.2	24.7
1st CL Tail	17.2	44.3	8.4	27.7	22.6
Rougher Conc	28.9	45.6	10.5	47.9	47.3
Scavenger Conc.	6.6	35.0	11.2	8.4	11.6
Tail	64.5	18.7	4.1	43.7	41.2
Head	100.0	27.6	6.4	100.0	100.0

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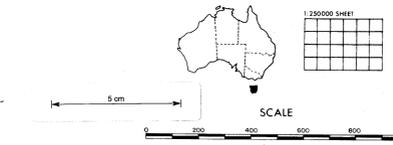
Sample localities for Assay Samples. I. Candor, Sept '86.





**-LEGEND-**

	<b>PLEISTOCENE</b>	Zones of 4% As Mineralization.
	<b>ORDOVICIAN</b>	Geological and Fluvial Stage Crev.
	<b>CAMBRIAN</b>	Quartz veins, conglomerate and quartzite.
	<b>PRE-CAMBRIAN</b>	Chert, black shales, and other volcanic rocks and interbedded siliceous rocks, some containing small veins of gold.
		Unconformity
		MT BLACK VOLCANICS
		FARRELL SLATES
		EASTERN VOLCANICS
		MURCHISON GRANITE
		TYNMAN NUCLEUS
		STERLING VALLEY GRANITES
		Geological Contact
		Fault
		Mine or Mineral Occurrence
		Diamond Drill Hole
		Contour
		E.L. or Lease Boundary
		Area Covered by H.E.C. Leases
		H.E.C. Power Line
		Highway
		Track
		Boundary of the S.W. Conservation Area and State Reserves



**EZ**  
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED  
MINERAL RESOURCES DIVISION

PROJECT: **STERLING VALLEY**

945025  
**AREA OF ARSENIC POTENTIAL**  
**HENTY FAULT ZONE**

Compiled: I.M.C. Date: 19-3-84 Scale: 1:110,000  
AMG: Longitude: Longitude:  
Drawn: R.J.R. File No: PLAN NO: Fig 1

AO-526-0033

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