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SOLORIENS MINING PTY. LTD.

EXPLORATION LICENCE 53/88

MOUNT FRANKLAND

ANNUAL REPORT : YEAR 3

(6 JANUARY 1991 - 5 JANUARY 1992)

OPEN FILE

K. MORRISON
DECEMBER 1991

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CONTENTS

TENEMENT INFORMATION

Exploration licence EL 53/88 is a 128km2 tenement in the region of Mt Frankland and Mt Balfour, western Tasmania (Figure 1 & Plan 1).

The licence was originally granted on 9 January 1989 for an area of 245km2. The results of Year 1 work led to a partial relinquishment of the southern and eastern parts of the EL. The reduction in area to 128km2 was approved by the Minister for Mines on 6 February 1990.

Seven Mineral Leases are contained with EL 53/88 (Plan 1).

The Licence is owned 100% by Soloriens Mining Pty. Ltd.

EXPLORATION PHILOSOPHY & OBJECTIVES

Copper and tin mineralisation are known in the Balfour area and work done to date suggest an association between the mineralisation and the location of major linear structures and a shallow sub-surface granite spine.

The current objective is to determine the age and structural control of base metal mineralisation exposed in the old Blafour copper mines and to explore primarily for base metals, following either a model of zoned mineralisation around a granite body, fault emplaced Cambrian mineralisation or late Proterozoic Sedex-type mineralisation.

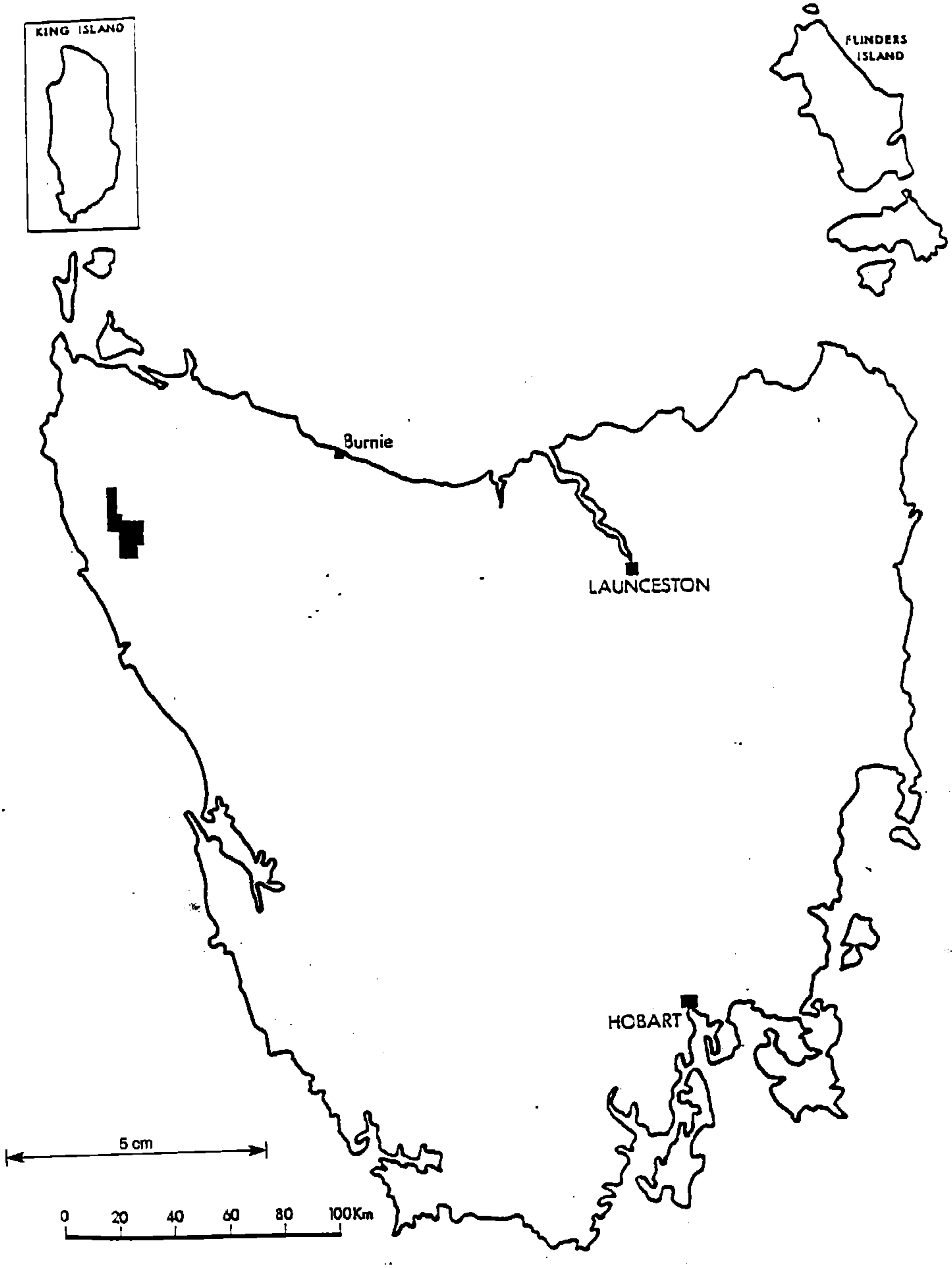

Figure 1. Location Map - EL 53/88, Mt Frankland.

SUMMARY OF WORK COMPLETED PRIOR TO CURRENT TERM

(a) A Review of previous exploration efforts over the Balfour mineral field, principally those of ACI Ltd. for copper and by CRA Exploration Pty. Ltd. for tin.

(b) The major component of Year 1 work was a gravity survey of the tenement to test for the presence of a granite body as a northerly extension of the Pieman Granite. Results of this survey suggested that future exploration efforts should focus on areas peripheral to the detected granite body north of 5 418 000. Consequently, the southern and eastern portions of the EL were surrendered in the February 1990 partial relinquishment.

WORK COMPLETED IN YEAR 3

A study of lead isotope and uranium and thorium contents of pyrite from the Balfour copper mineralisation was undertaken, to determine age and metallogenic affinity (Appendix 1).

Although the isotope ratios cover a wide range of values, they plot on linear regression curves with slopes suggesting relatively high Th/U ratios. The elevated 208Pb/204Pb ratios, relative to known Cambrian rocks in western Tasmania, are also consistent with source rocks unusually enriched in thorium. On the basis of the low uranium concentrations measured by spectrometry (approx 1 ppm), conclusions regarding the age of the mineralisation are; most likely - Cambrian, less likely - Late Proterozoic, least likely - Devonian. A metamorphic fluid source is also suggested and this is consistent with the strong association between mineralisation and major linear structures at Balfour.

Additional work is required to compare the age of the tin and copper mineralisation at Balfour. No lead-rich minerals have been located within the Specimen Hill tin prospect, for isotopic analysis, but the trace element chemistry of waters draining the two sites has been measured and indicate significant differences (Appendix 2).

Variable solubilitis cause major contrasts between water and source rock composition (eg the 17:1 U/Th ratio in CM1) CM1 is essentially acid drainage from the Central workings, (324.340E, 5.430.050N) compared to B2 which was taken from a stream draining Specimen Hill (323.540E, 5.429.690N).

Nevertheless, B2 shows enrichment in boron, rubidium and bismuth relative to CM1, suggesting a possible granite component to the source of B2.

PROPOSED YEAR 4 EXPLORATION

1 Sample mineralisation from all available copper and tin shows in the EL and use lead isotopes to attempt confirmation of two separate mineralisation episodes.

2 Map existing road cuttings and Lindsay River section. Map structural geology of Murrays Reward and The Clump prospects.

3 Stream water trace element geochemical survey on the trend on copper workings between The Clump and Mt Hazelton.

4 Regional structural geology map based on magnetics, gravity and remote sensing imagery.

APPENDIX 1

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Sirotope

CSIRO

AUSTRALIA

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Chief: Dr. B.J.J. Embleton

REPORT ON THE Pb ISOTOPIC COMPOSITIONS OF PYRITIC VEIN SAMPLES FROM THE MURRAY'S REWARD PROSPECT WESTERN TASMANIA

REPORT SR 161

GRAHAM R. CARR
JUDITH A. DEAN

11/6/91

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1. AIM

The aim of this study has been to determine the likely metallogenic association of pyritic veins from the Murray's Reward prospect, based on an assessment of their Pb isotopic compositions. The prospect occurs within a Proterozoic sequence and it is uncertain whether the alteration is Devonian, Cambrian or even Proterozoic in age.

2. SAMPLES AND METHODS

An initial group of 6 pyrite-rich samples were provided by Garry Davidson. Following initial analyses a further handspecimen of MR5 (designated MR5r in Table 1) was provided for analysis. Brief descriptions of the samples are as follows (after G. Davidson):

- MR1 Coarse pyrite cubes in weathered Cu ore (now covellite)
- MR2 As above
- MR3 As above
- MR4 Coarse aggregates of weathered pyrite in vein quartz
- MR5 Fine granular pyrite with minor vein quartz and covellite
- MR6 Granular pyrite in quartz and covellite

A pyrite-rich, or pyrite+covellite-rich subsample was taken from each sample and pulverized under clean conditions. A total of 6 separate subsamples were taken from MR5 and MR5r in an attempt to define the variation in Pb content and Pb isotopic ratios. About 0.1g of each sample powder was then weighed into a teflon beaker and dissolved in a 1:1 mixture of 7N HCl and 7N HNO_3 acids. Lead was extracted by anion exchange methods in dilute HBr acid solutions and purified by micro-electrodeposition techniques onto Pt electrodes. A small amount of ^{202}Pb spike was added at the initial dissolution stage in order that Pb contents could be determined simultaneouly with isotope ratios.

Lead was loaded onto single Re filaments and isotope ratios were determined on a VG 54E solid source thermal ionization mass spectrometer run in fully automated mode. Results were normalized to the accepted values of the international standard NBS 981 by applying a correction factor of +0.08% per atomic mass unit. Precision estimates (mean $\pm$ 2σ) are depicted as error bars in the upper left hand corner of the accompanying diagrams and are based on over 1300 analyses of international standards and natural samples.

3. TARGET SIGNATURES

The concept of Target Signatures is discussed in Appendix 1. The basis of the Pb isotope approach to exploration problems is to compare the initial Pb isotope ratios of "unknown" samples with the initial ratios, or Target Signatures, of the known mineralization in a particular geological environment. Initial ratios are the Pb isotope ratios at the time of formation of the mineralization and are preserved in minerals or rocks with low U/Pb and Th/Pb ratios. Minerals or rocks with relatively high U/Pb ratios will contain radiogenic Pb formed *in situ* from the decay of U and Th and thus the isotopic ratios will be different from the initial ratios. The basic "rule" is that mineralization in a particluar geological environment will have the same, or similar, Pb isotope initial ratios.

The Target Signatures for Cambrian mineralization within the Mt Read Volcanics (MRV) are well established (Gulson and Porritt, 1987). In Figures 1 and 2 they are represented by 95% confidence ellipses for Rosebery, Que River and Hellyer. These ellipses define the mean $\pm 2\sigma$ of the pairs of ratios indicated on the axes. The Pb isotope signatures of mineralization related to Devonian thermal events are represented on these diagrams by the Queen Hill mineralization. In general, Devonian mineralization has higher $^{206}Pb/^{204}Pb$ ratios than Cambrian mineralization although recent studies indicate that some overlap may occur at $^{206}Pb/^{204}Pb$ ratios of about 18.4.

There are no Pb isotope data available for definite examples of Proterozoic mineralization in western Tasmania. However, it can be stated with reasonable confidence that such mineralization should have a $^{206}Pb/^{204}Pb$ ratio of < 18.

4. RESULTS

The results are presented in Table 1 and in Figures 1 - 4. The significant features of the results are as follows.

1) The samples have a wide range of isotopic ratios, and on both $^{208}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ and $^{207}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ diagrams the results plot on well defined linear arrays. The slope of the regression through the data on Figure 3 indicates a relatively high Th/U ratio of 5.3 in the samples.

2) There is an inverse relationship between the $^{206}Pb/^{204}Pb$ ratio and the Pb content of the samples (Fig 4).

3) Multiple analyses of MR5 have the same isotopic ratios to within experimental error and the data plot within the Hellyer/Que River Target ellipses on the $^{207}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ diagram (Figs 1 and 2, pts 6,7,and 8). This sample has the highest Pb content of all samples analysed. Multiple analyses of MR5r have lower Pb contents and higher $^{206}Pb/^{204}Pb$ ratios (Figs 1 and 2, pts 10-13).

4) All sample have very high $^{208}Pb/^{204}Pb$ ratios as compared to the Target Signatures and to the average crustal Pb evolution curve (growth curve) of Cumming and Richards (1975) (Fig. 1).

5. DISCUSSION

It is assumed that the pyrite-covellite vein mineralization could have formed in response to hydrothermal activity of either 1) Proterozoic, 2) Cambrian or 3) Devonian age. Each of these possibilities can be assessed in the light of the Pb isotopic evidence.

Evidence for Proterozoic origin On the $^{208}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ diagram (Fig. 3) the linear regression through the data intersects the Cumming and Richards (1975) growth curve indicating a "model age" of about 700 Ma. Although this is broadly consistent with some Rb-Sr ages in western Tasmania (Turner, 1988), growth curves such as that of Cumming and Richards (1975) have been shown not to apply directly at least to the Palaeozoic in western Tasmania where model ages are about 250Ma less than true geological age. Thus an "Upper Proterozoic model age" is as precise as we can be.

This intersection model age assumes initial $^{206}Pb/^{204}Pb$ ratios (17.2 - 17.8) and $^{208}Pb/^{204}Pb$ ratios (37.0 - 37.4) for the mineralization that plot on the growth curve (Fig. 3). If this assumption is correct, then the measured ratios for MR5 cannot represent initial ratios and like all the other samples must contain a significant radiogenic component added since the deposition of the sulfides.

Evidence for a Cambrian origin If the Pb isotopic ratios for MR5 represent initial ratios, then the similarity with the Target Signatures on the $^{207}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ diagram is strong evidence for a Cambrian origin for the mineralization. According to this model, the high $^{208}Pb/^{204}Pb$ ratios as compared to the Target Signatures would result from elevated Th levels in the source rocks of the mineralization to give high Th/U ratios relative to the source rocks of the MRV.

Evidence for a Devonian origin There is no direct evidence for a Devonian origin for the mineralization; i.e. no Devonian Signatures. However a Devonian model can be proposed based on analogies with other Proterozoic terrains in Australia. According to such a model the high $^{208}Pb/^{204}Pb$ ratios result from both Th enrichment in the source rocks as well as U depletion to give high Th/U ratios. The relative depletion of U in the source rock region results in lower $^{206}Pb/^{204}Pb$ ratios than would normally be expected of Devonian mineralization (Fig. 3). The $^{206}Pb/^{204}Pb$ ratios of mineralization derived from such a U depleted source cannot be predicted and there would thus be a large element of "chance" in the similarity with the Cambrian Target Signatures. Such U depleted signatures are characteristic of Proterozoic terrains that have undergone high grade (granulite facies) metamorphism.

In assessing the possibilities of a Proterozoic vs Cambrian origin for the mineralization, the question of whether the results for MR5 represent an initial ratio are of critical importance. The Pb contents of 240 ppm for this sample would require U levels of $\approx$ 20 ppm over the period from about 700 Ma to the Present to have increased the $^{206}Pb/^{204}Pb$ ratio from about 17.6 to its present value. If only "normal" levels of U were present in the veins, then the ratios are probably close to initial ratios. In Figure 4 the results appear to conform to the "normal" U/Pb relationships defined by Que River, Mt Lyell and Lake Selina and so a Cambrian origin is favoured.

6. CONLUSIONS

1) No definitive conlusions can be made based on the available data.

2) However, in the absence of evidence for elevated U contents in the veins it is reasonable to conclude that the results for MR5 represent initial ratios and thus that the $^{206}Pb/^{204}Pb$ and $^{207}Pb/^{204}Pb$ ratios are consistent with a Cambrian origin for the mineralization. The elevated $^{208}Pb/^{204}Pb$ ratios result from Th enrichment in the source rocks relative to the normal MRV.

3) If it can be shown that the U contents of **unweathered** veins are of the order of 20 ppm then a Proterozoic origin for the mineralization is possible.

4) A Devonian origin for the veins cannot be ruled out but is considered less likely. It would require both a source terrain of granulite facies Proterozoic rocks and the chance coincidence of the $^{206}Pb/^{204}Pb$ and $^{207}Pb/^{204}Pb$ ratios with the Cambrian Target Signatures.

7. REFERENCES

Cumming, G.L. and Richards, J.R., 1975. Ore lead isotope ratios in a continuously changing Earth. *Earth Planet. Sci. Letts*, 28, pp. 155-171.

Gulson B.L. and Porritt, P.M., 1987. Base metal exploration of the Mount Read Volcanics, Western Tasmania: Pt. II. Lead isotope signatures and genetic implications. *Econ. Geol.*, 82, pp. 308-327.

Turner, N.J., 1989. Precambrian. In; Burrett, C.F and Martin, E.L., (Eds), Geology and mineral resources of Tasmania. *Geol. Soc Aust.*, Spec. Pub. 15, pp. 5-46.

Table 1. Pb isotope ratios and Pb contents of samples.

Sample	208 Pb / 206 Pb	207 Pb / 206 Pb	206 Pb / 204 Pb	207 Pb / 204 Pb	208 Pb / 204 Pb	Pb(ppm)
1 MR1	2.0918	0.8245	19.004	15.668	39.751	31
2 MR2	2.0995	0.8404	18.598	15.630	39.045	36
3 MR3	2.0990	0.8369	18.675	15.630	39.199	9
4 MR4	2.1057	0.8479	18.395	15.597	38.736	56
5 MR4 R	2.1047	0.8479	18.391	15.593	38.708	56
6 MR5	2.1092	0.8502	18.367	15.616	38.739	239
7 MR5 R1	2.1084	0.8499	18.372	15.615	38.736	251
8 MR5 R1 reed	2.1071	0.8497	18.357	15.597	38.680	245
9 MR6	2.1049	0.8460	18.459	15.617	38.853	44
10 MR5r	2.0978	0.8422	18.536	15.611	38.884	81
11 MR5r R1	2.1004	0.8436	18.518	15.621	38.895	74
12 MR5r R2	2.0964	0.8422	18.535	15.610	38.857	81
13 MR5r R3	2.0945	0.8402	18.588	15.616	38.932	79

Sample No prefixes refer to points plotted in Figures.
R1, R2 etc indicate replicate analyses of separate subsamples.
reed indicates re-electrodeposition of same dissolution

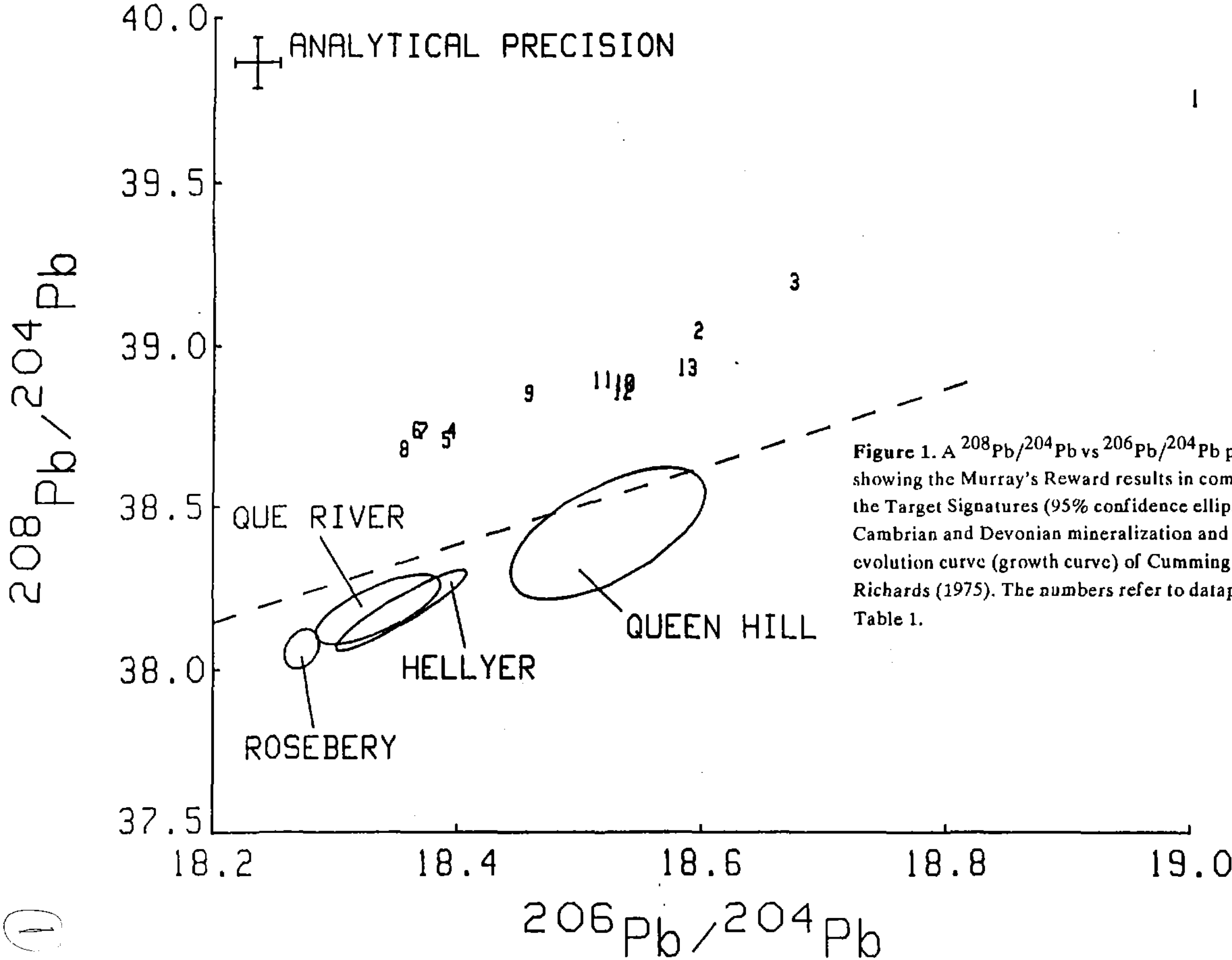

Figure 1. A $^{208}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ plot showing the Murray's Reward results in comparison to the Target Signatures (95% confidence ellipses) for Cambrian and Devonian mineralization and the Pb evolution curve (growth curve) of Cumming and Richards (1975). The numbers refer to datapoints in Table 1.

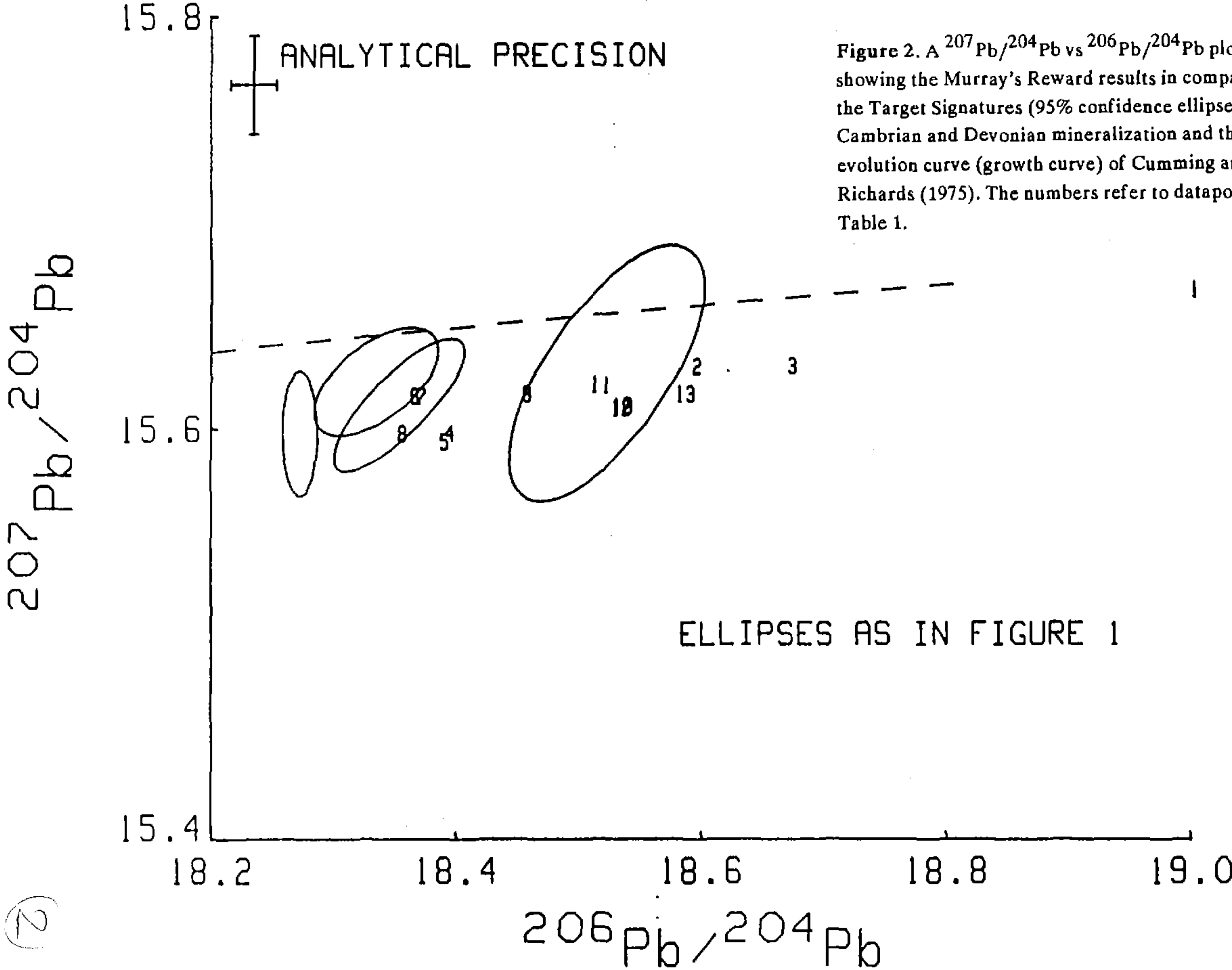

Figure 2. A $^{207}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ plot showing the Murray's Reward results in comparison to the Target Signatures (95% confidence ellipses) for Cambrian and Devonian mineralization and the Pb evolution curve (growth curve) of Cumming and Richards (1975). The numbers refer to datapoints in Table 1.

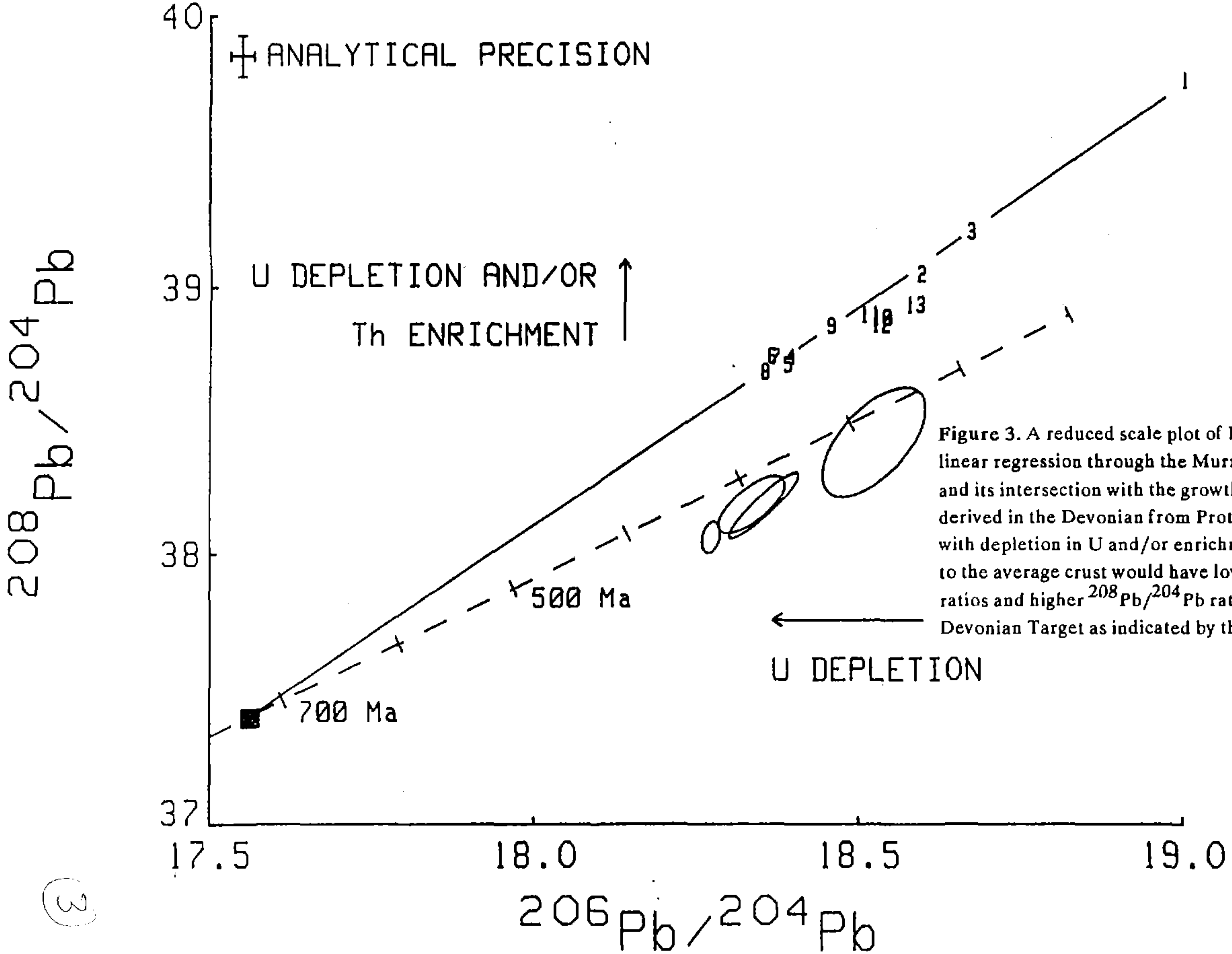

Figure 3. A reduced scale plot of Fig. 1 showing the linear regression through the Murrays Reward results and its intersection with the growth curve. Lead derived in the Devonian from Proterozoic source rocks with depletion in U and/or enrichment in Th relative to the average crust would have lower $^{206}Pb/^{204}Pb$ ratios and higher $^{208}Pb/^{204}Pb$ ratios than the Devonian Target as indicated by the arrows.

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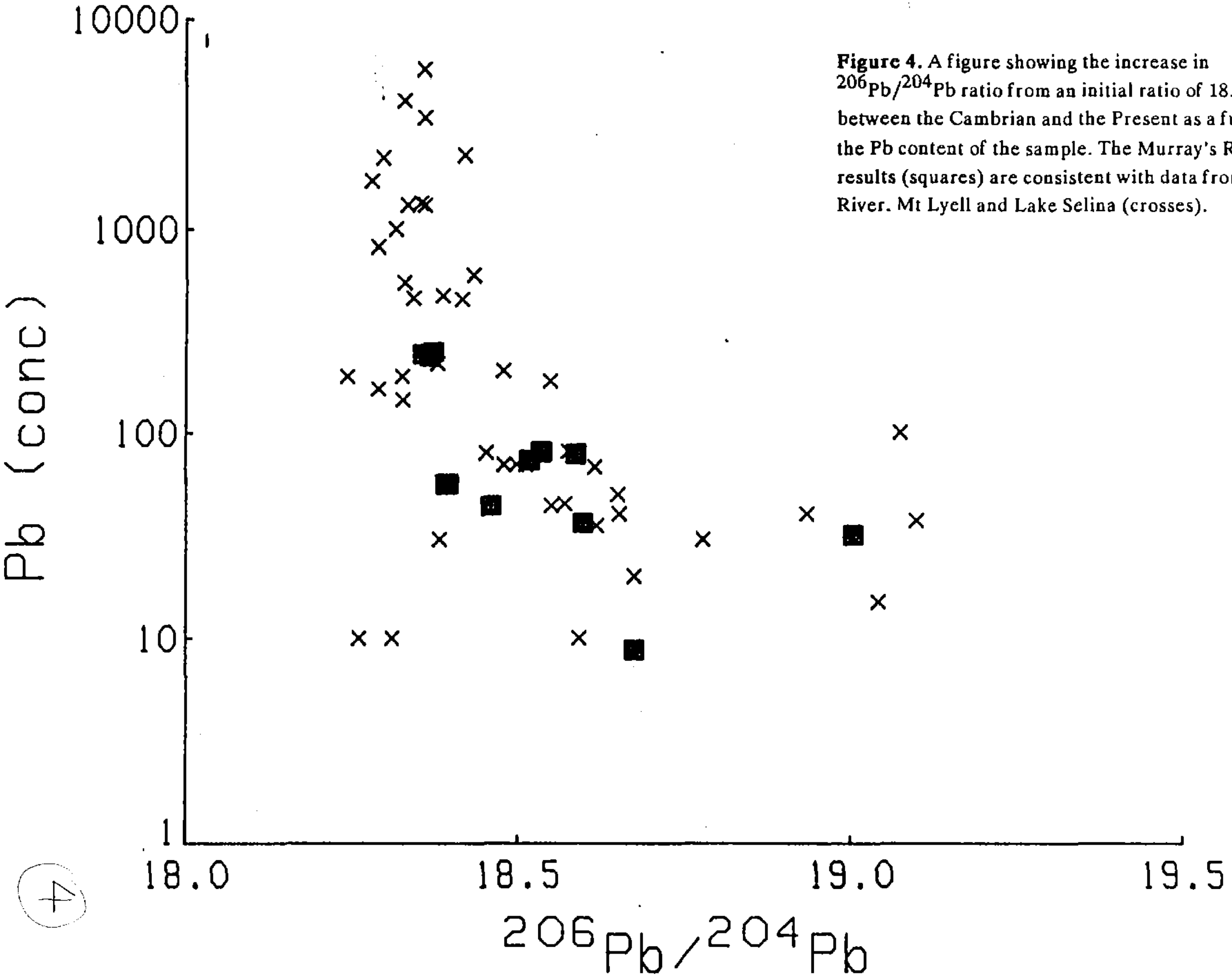

Figure 4. A figure showing the increase in $^{206}Pb/^{204}Pb$ ratio from an initial ratio of 18.25 - 18.4 between the Cambrian and the Present as a function of the Pb content of the sample. The Murray's Reward results (squares) are consistent with data from Que River. Mt Lyell and Lake Selina (crosses).

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Centre for Ore Deposit and Exploration Studies

124018

A National Key Centre at the University of Tasmania

Graham Carr
CSIRO Sirotope laboratory
PO Box 136,
North Ryde,
NSW 2113

27/2/91

Dear Graham,

Hello, I hope things are well with you. As I discussed on the phone with you last week, I am forwarding 6 samples for Pb-isotope analysis at the Sirotope commercial rates ($400 per sample). The sample medium is intended to be variably weathered vein pyrite, because no modal galena is present at the site; I have taken your advice and not drilled the pyrites, so as to avoid contamination.

The samples and their mineralogy are:
Murrays Reward 1: coarse pyrite cubes in weathered copper ore (now covellite).
MR2: as above.
MR3: as above.
MR4: Coares aggregates of weathered pyrite in vein quartz.
MR5: Fine granular pyrite with minor vein quartz and covellite.
MR6: Granular pyrite in quartz and covellite.

Thanks for your services on this project. I look forward to recieving the results and a brief report on the Pb-systematics of this material in a few weeks.

Yours Sincerely,

Garry Davidson

Director: Dr Ross R. Large Telephone (002) 202472
Geology Department, University of Tasmania, GPO Box 252C, Hobart, Tasmania, Australia 7001
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SUPPLEMENTARY REPORT ON Pb ISOTOPIC COMPOSITIONS OF SULFIDE SAMPLES FROM MURRAYS REWARD

GRAHAM R. CARR
28/8/91

Following discussions with Garry Davidson concerning the conclusions of the previous report, it was decided to analyse some of the samples to determine the levels of U.

Semi-quantitive (approx. ±25%) gamma ray spectrometric analysis of the samples was undertaken by Dr Bruce Dickson of CSIRO. The results listed below indicate U levels ≤1 ppm. Even accounting for possible U mobility in these incipiently weathered samples, it would seem very unlikely that levels of the order of 20 ppm were ever associated with these samples.

Thus Cambrian origin is favoured as the most likely metallogenesis for these samples.

	SAMPLE	K %	eU ppm	eTh ppm	eU/eTh
mR5	G228. ~~mr5~~	-.019±0.030	0.86±0.20	3.86±0.38	4.5
mR5/2	g337	0.141±0.031	1.18±0.21	5.67±0.43	4.8
mR6	g229	0.011±0.032	0.47±0.20	1.73±0.36	3.7
mR3	g226	-.016±0.021	0.16±0.13	0.41±0.24	2.6
mR4	g227	0.045±0.029	0.21±0.18	1.05±0.32	5.0
mR1	g224	0.076±0.047	0.84±0.29	2.61±0.53	3.10

SUMMARY REPORT TO KEN MORRISON, 17/9/91:

PB ISOTOPE ANALYSIS OF MURRAYS REWARD COPPER PROSPECT.

Work Undertaken and Aims:

Six samples of weathered sulphide ore were supplied, consisting of coarse aggregates of covellite and pyrite in a vein quartz matrix, known to transect the Precambrian rocks of the Arthur Lineament. These samples were sent uncrushed to the CSIRO Sirotope facility at North Ryde to be analysed for their Pb-isotope contents (see appended letter of correspondence). In the absence of galena, this work was carried out on pyrite separates, because these are normally a Pb-enriched part of sulphide assemblages. The aim of this analysis was to determine the age and affinities of the vein-style mineralisation. Results were received on 11/6/91, and a decision made in concert with the contractor to obtain U and Th analyses of the samples to assess their likely radiogenic contribution (semi-quantitative gamma ray spectrometry with only a 25% precision). This was successfully completed, with results reported on 28/8/91.

Summary of Results:

A detailed and very comprehensive report has been supplied by Dr Graham Carr of CSIRO, who has extensive experience in the interpretation of Pb-isotopes of Eastern Australian ore deposits. This report has already been passed on to the contractor. The supplementary CSIRO report on U and Th contents of pyrite separates is appended. My summary does not add appreciably to the scientific interpretation of Dr Carr, which was thorough, well-balanced, and knowledgable.

Previous studies of ores in western Tasmania have provided a solid data base for comparison of the Murrays Reward material. Despite this, Murphys' Law has operated successfully to produce a suite of results distinctly unique in the district, and therefore with a less reliable geological connotation. The samples are particularly enriched in Pb^{208}, normally derived from the radiogenic decay of Th, and hence it can be concluded that the region from which lead was leached to form Murrays Reward, was also Th-rich.

In terms of 207/204 Pb – 206/204 Pb ratios, the least radiogenic samples of the suite plot in the field of Tasmanian Cambrian massive sulphide deposits. This approach assumes that these samples have the highest original lead and lowest original uranium contents, and hence are likely to be the most reliable indicators of the parentage of the lead. The sulphide samples were analysed for their uranium contents in case even the least radiogenic samples were still relatively enriched in U, in which case it is possible the rocks were older than Cambrian. This has not proved to be the case, with all samples containing less than 1.18 ± 0.21 ppm U, which would not be sufficient to add significant radiogenic Pb. It therefore seems extremely likely that the mineralisation is Cambrian in age. The thorogenic character of the Pb-isotope systematics favours an origin for the Pb from older amphibolite grade metamorphics (see Carr 1991), which characterise the basement of the region. Graham Carr has encountered this phenomenon in metamorphic rocks before, caused by the partitioning of uranium with respect to thorium into metamorphic fluids.

APPENDIX 2

VG PLASMAQUAD
SEMIQUANTITATIVE RESULTS

5746 - CM1

SAMPLE IDENTITY :KM34   BLANK IDENTITY :KM31
SAMPLE DESCRIPTION :
USER :

Internal Standard used :In   Mass : 115 Response :5394.02454
Dilution Factor : 1.00000000
****** : No response calibration

ELEM	MASS	CONC (ppb)	ELEM	MASS	CONC (ppb)
Li	7	16.425	Be	9	1.636
B	10	0.839	Sc	45	2.352
Ti	48	68.866	V	51	4.985
Cr	52	0.187	Fe	54	6645.924
Mn	55	1149.912	Co	59	70.554
Ni	60	41.219	Cu	63	13801.440
Zn	64	353.773	Ga	69	0.441
Ge	73	1.614	As	75	4.817
Br	81	41.660	Se	82	4.159
Rb	85	1.029	Sr	88	*********
Y	89	4.746	Zr	90	0.509
Nb	93	0.002	Mo	98	0.049
Ru	102	0.025	Rh	103	0.080
Pd	105	0.424	Ag	107	0.009
Cd	111	2.333	In	115	*********
Sn	120	*********	Sb	121	1.063
Te	125	*********	I	127	1.064
Cs	133	1.155	Ba	138	7.325
La	139	4.139	Ce	140	11.766
Pr	141	1.799	Nd	143	9.158
Sm	147	5.269	Eu	153	1.201
Gd	157	4.500	Tb	159	0.483
Dy	163	1.978	Ho	165	0.285
Er	167	0.596	Tm	169	0.107
Yb	173	0.699	Lu	175	0.089
Hf	178	0.079	Ta	181	*********
W	182	0.136	Re	187	0.029
Os	192	0.076	Ir	193	*********
Pt	195	*********	Au	197	0.152
Hg	202	*********	Tl	205	2.059
Pb	208	351.762	Bi	209	0.003
Th	232	0.306	U	238	5.135

124023

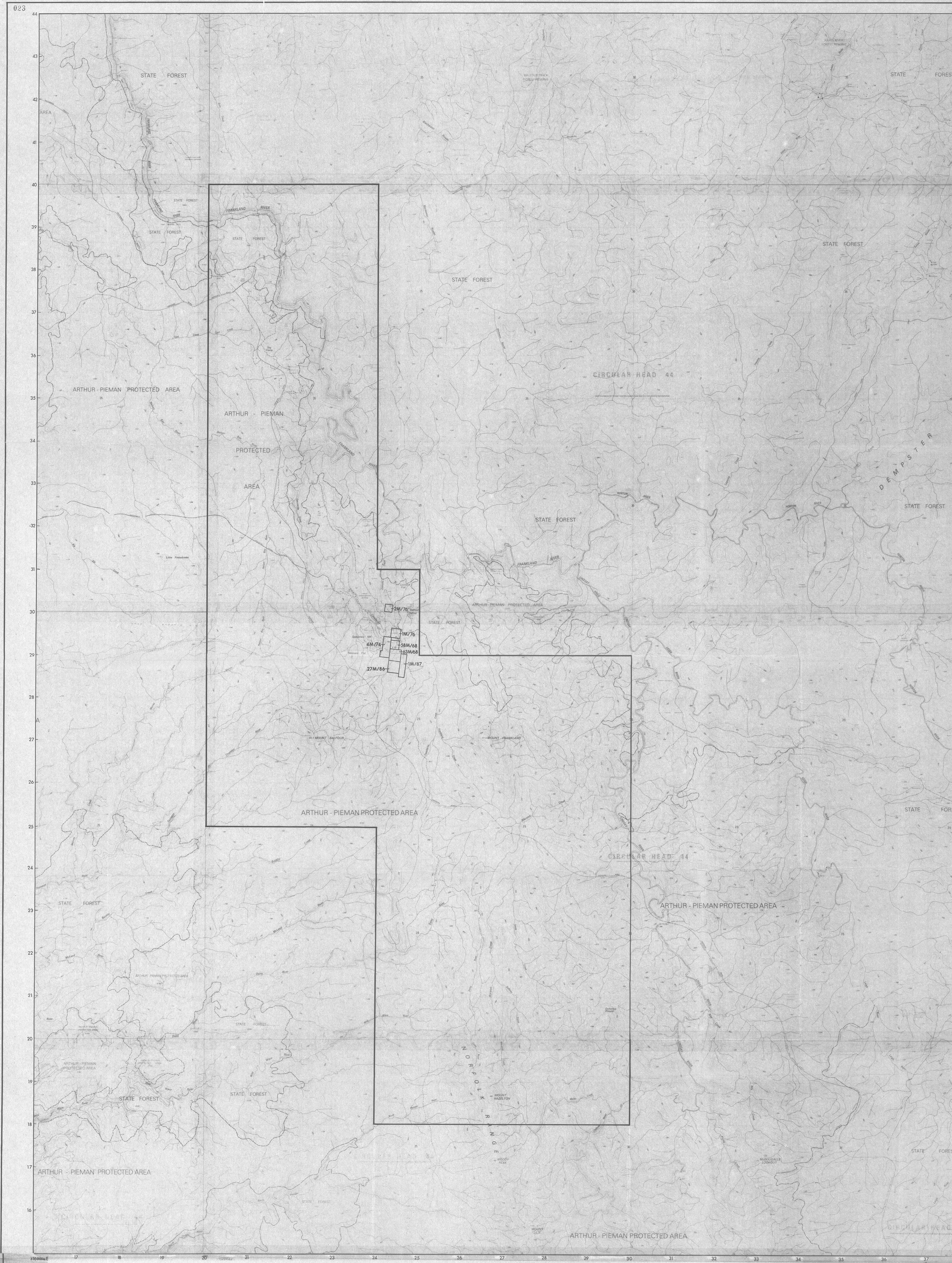
VG PLASMAQUAD
SEMIQUANTITATIVE RESULTS

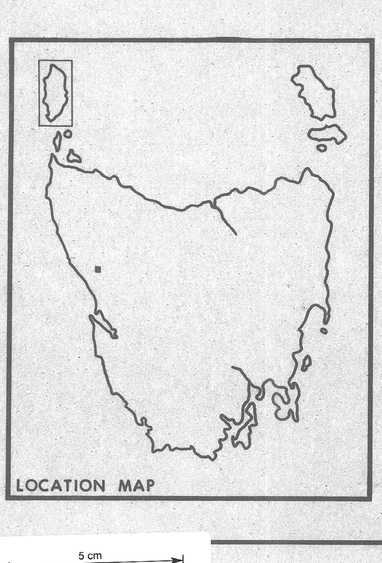
5766 - B2

SAMPLE IDENTITY :KM55 BLANK IDENTITY :KM45
SAMPLE DESCRIPTION :
USER :

Internal Standard used :In Mass : 115 Response :6962.45716
Dilution Factor : 1.00000000
****** : No response calibration

ELEM	MASS	CONC (ppb)	ELEM	MASS	CONC (ppb)
Li	7	0.843	Be	9	0.060
B	10	3.049	Sc	45	2.908
Ti	48	4.275	V	51	7.668
Cr	52	2.268	Fe	54	774.121
Mn	55	26.447	Co	59	0.336
Ni	60	0.366	Cu	63	0.485
Zn	64	10.669	Ga	69	0.329
Ge	73	0.161	As	75	16.956
Br	81	96.786	Se	82	*********
Rb	85	2.461	Sr	88	6.888
Y	89	0.097	Zr	90	0.232
Nb	93	0.002	Mo	98	0.044
Ru	102	0.029	Rh	103	0.006
Pd	105	0.030	Ag	107	0.039
Cd	111	4.157	In	115	*********
Sn	120	0.053	Sb	121	0.042
Te	125	0.336	I	127	3.455
Cs	133	0.216	Ba	138	7.122
La	139	0.118	Ce	140	0.267
Pr	141	0.031	Nd	143	0.167
Sm	147	0.052	Eu	153	0.013
Gd	157	0.039	Tb	159	0.009
Dy	163	0.024	Ho	165	0.009
Er	167	0.022	Tm	169	0.007
Yb	173	0.051	Lu	175	0.010
Hf	178	0.027	Ta	181	0.007
W	182	0.218	Re	187	0.005
Os	192	*********	Ir	193	0.012
Pt	195	0.172	Au	197	0.105
Hg	202	*********	Tl	205	0.027
Pb	208	1.653	Bi	209	0.035
Th	232	0.147	U	238	0.036





MINERAL LEASES – EL. 53/88

No.	Owner	Area
58M/68	S.A. TATLOW	4 ha
63M/68	S.A. TATLOW, B.C. LING & R.LING	8 ha
4M/74	J.H. HOLLOWAY & R.J. SOUTH	9 ha
1M/76	M. LAAN & N.R. LANGSFORD	5 ha
2M/76	M. LAAN & N.R. LANGSFORD	3 ha
27M/86	B.C. & R. LING & S.A. TATLOW	8 ha
1M/87	P. COSMETTO & B.C. LING	8ha

91-33

SOLORIENS MINING PTY LTD

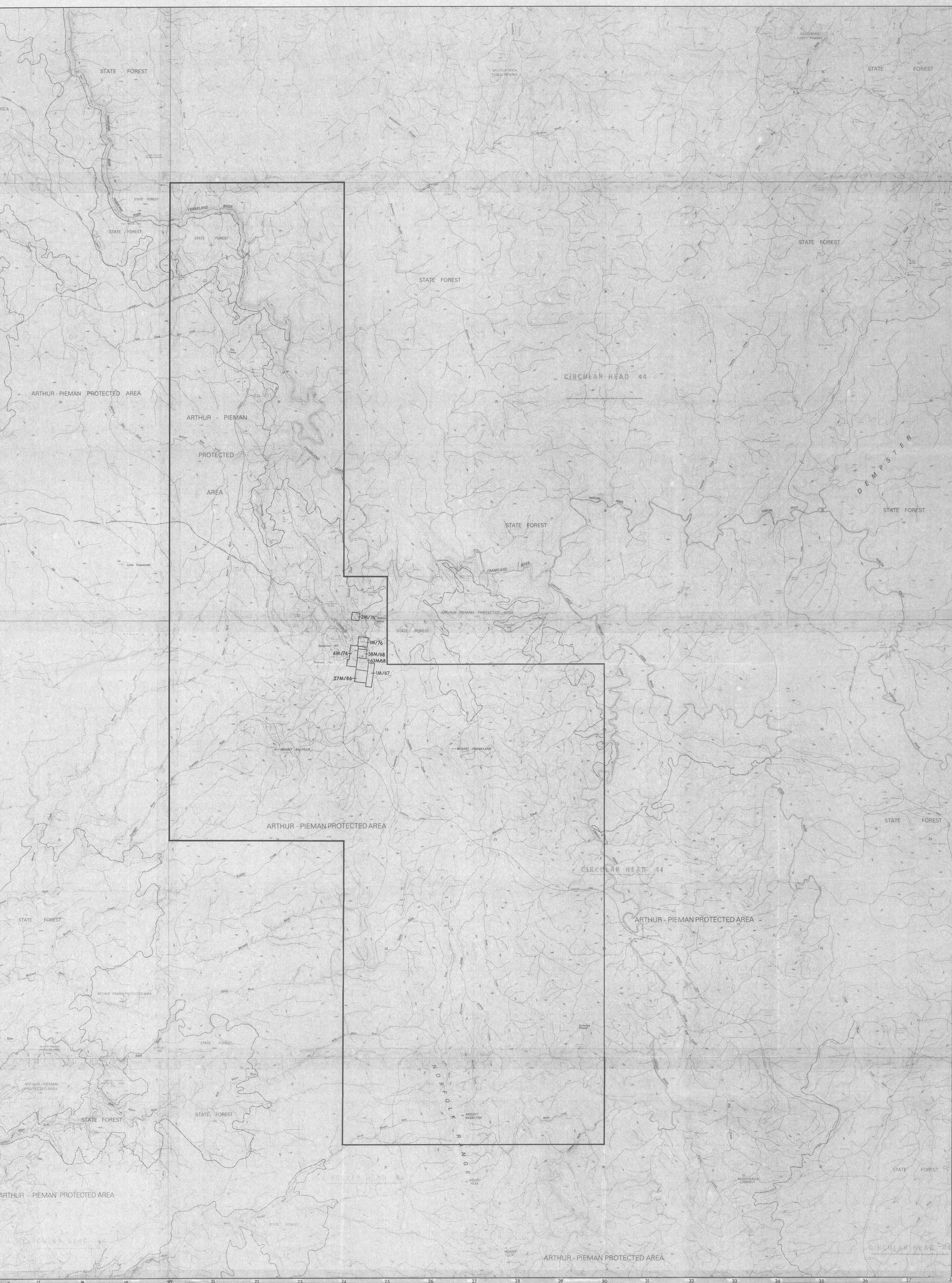
EL. 53/88 - MT FRANKLAND, TASMANIA

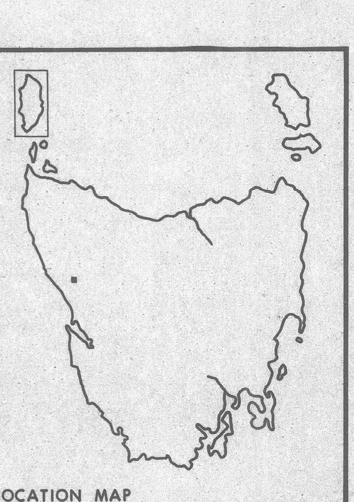
LOCATION PLAN & CONTAINED MINERAL LEASES (Competitor)

COMPILED	V.H
DRAWN	T.K.D.Cont
DATE	
SCALE	1 : 25,0
PLAN No.	1

124024

5 cm





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91-3315.

SOLORIENS MINING PTY LTD

EL. 53/88 - MT FRANKLAND, TASMANIA

LOCATION PLAN & CONTAINED MINERAL LEASES (Competitor)

COMPILED	V.H
DRAWN	T.K.D.Contracting
DATE	
SCALE	1 : 25,000
PLAN No.	1

124024

5 cm