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AMINCO N.L.

EXPLORATION DIVISION

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**MICROFILMED**

EXPLORATION LICENCE 22/74

TASMANIA

MARIONOAK RIVER AREA

Progress Report on Exploration for  
six months ending  
February 25, 1978.

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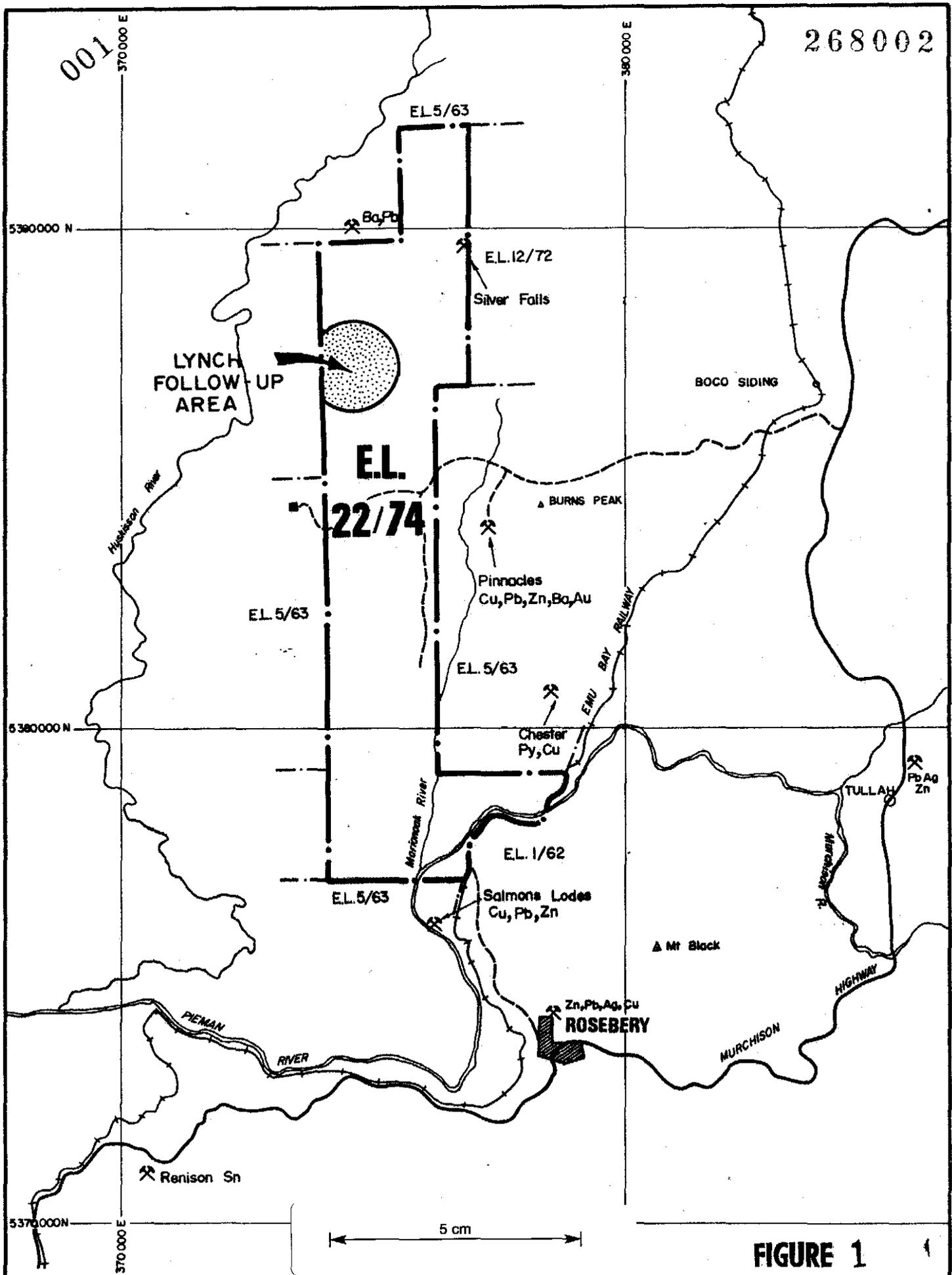
by

I. B. Freytag, B.Sc (Hons)

Geologist

Adelaide  
South Australia

23rd March, 1978.



**FIGURE 1**

**COMINCO EXPLORATION PTY LTD**

Drawn: R.K.Y.	<b>NORTH WEST TASMANIA MARIONOAK RIVER EL.22/74 LOCATION PLAN</b>	Location code: K55/5-6
Traced:		Scale: 1:100,00
Checked:		Date: December 1974
Revised: _____ Date: _____		Plate N <sup>o</sup> MOC 1

## INTRODUCTION

The exploration programme in EL 22/74 culminated early in 1977 with the gridding, soil geochemistry and trenching of a highly anomalous (Cu-Pb-Zn) tributary area to the north-west of Lynch Creek (Freytag 1977).

The results of this work led to the conclusion that the source of the base metal anomaly was formational in sedimentary rocks, and that the geochemical dispersion patterns were probably augmented by an abundance of manganese oxides in weathered rock. There was little indication of either disseminated or vein mineralisation.

Nevertheless, it was apparent that more than one square kilometre of area to the south of the grid has a number of streams anomalous in Pb, several of them accompanied by a weak Zn anomaly and a few also with anomalous Cu (see Fig. 2). One sample registered 365 ppm Cu, 1700 ppm Pb and 9400 ppm Zn.

Field checking was carried out in September and December, 1977, to obtain a better understanding of the geology and geochemistry of this anomalous area.

This report outlines the results of the follow-up work, and also reviews the status of the Silver Falls prospect.

## FOLLOW-UP TO STREAM SEDIMENT ANOMALIES, LYNCH CREEK AREA

Most of the anomalous tributaries were inspected and parts of the surrounding catchments west of Lynch Creek were traversed. The area is shown in Figure 2.

The terrain is very steep, thickly wooded, and rocks are usually not well-exposed.

As a result of this work, it is now evident that base metal anomalies in these streams have a close association with black shales and siltstones cut by veins and pods of quartz. Minor mineralisation has been discovered in these rocks.

The quartz is cream to greyish in colour, very finely crystalline, commonly drusy or vugular with the cavities often lined with a mosaic of small quartz euhedra, and it contains small patches of carbonate, ? barite and occasionally pyrite.

At locality 1 (Fig.2), massive quartz probably exceeds five metres in thickness,

the configuration of the bodies not being clear at the surface.

A massive lens of quartz at locality 2 forms cliffs up to 10 metres high. The dip here is NNE at about 40°.

The shales are usually intensely black, pyritic and carbonaceous, to the extent of being almost sooty at locality 4.

Boundaries between the quartz and enclosing shales are gradational through very siliceous rock with silicified remnants of dark shale, to silicified ("cherty") black shale invaded by tiny quartz veinlets.

Mineralisation in these rocks is evident in several ways :-

- (1) Brecciated black shale flooded with quartz (loc.1) contains small patches of coarsely crystalline sphalerite. A sample of this (205755, Table I) assayed 4.6% Zn.
- (2) Fairly soft, crumbly gossan about 10 cm wide, occurring at the margin of the quartz at locality 2, assayed (sample 205740).

1,570 ppm Cu

2,300 ppm Pb

5,500 ppm Zn

370 ppm Ni

Similar material resembling a gossanous siltstone, 700 metres to the north-east assayed:

390 ppm Cu

>10,000 ppm Pb

4,250 ppm Zn

4,000 ppm Mn

(sample 206404A, Table 1).

- (3) Quartz carbonate material from locality 1 (sample 205741) and locality 2 (sample 205748) assayed 34 ppm Ag and 55 ppm Ag respectively.
- (4) Black shale samples 205745 - 205747 and 206402B (Table 1), which seem to be unaffected by silica, have a range of 180 ppm to 420 ppm Pb, suggesting a somewhat high background for this metal.

TABLE 1

## ROCK CHIP ANALYSES

## LYNCH CREEK AREA

Sample No.	Cu	Pb	Zn	Ni	Ag	Mn	Co	Rock Type
205740	1570	2300	5500	370	2	820	40	Gossan
741	55	140	80	10	34	75	5	Qtz - carb- shale
742	80	125	45	10	1	75	5	Qtz - carbonate
743	20	<20	10	5	<1	35	1	Quartz
744	120	50	30	20	5	20	5	Black shale
745	100	180	20	20	5	25	5	" "
746	70	420	20	10	3	35	5	" "
747	80	220	20	40	2	40	15	" "
748	70	120	265	10	55	55	5	Qtz - carbonate
749	30	425	10	10	1	60	5	Silic.shale - qtz.
750	30	70	25	10	<1	200	5	Silic shale
751	5	<20	60	10	<1	70	2	Quartz
752	30	30	770	10	3	55	5	Bl.shale- qtz veins
753	5	<20	100	10	<1	70	2	Quartz
754	5	20	15	10	<1	85	5	Fine greywacke
755	20	895	46000	5	2	40	2	Qtz - sphalerite
756	35	80	24	55	1	20	15	Black shale
206401	40	20	100	N/D	<2	115	N/D	Weath.pyritic shale
402 A	15	280	330	"	2	120	"	Silic. black shale
402 B	20	240	1050	"	2	40	"	Black pyritic shale
402 C	20	80	60	"	<2	20	"	Silic. pyritic siltst.
402 D	5	20	20	"	<2	35	"	Chert, qtz. stringers
404 A	390	>10,000	4250	"	<2	4000	"	Gossanous siltst.
404 B	15	90	110	"	<2	100	"	Goss. stringers
404 C	20	140	80	"	<2	450	"	Qtz. limonitic
404 D	<2	20	40	"	<2	75	"	Quartzite, qtz veins
405	140	660	600	"	2	1400	"	Fine clastic
406	330	40	190	"	<2	1150	"	Dolerite

All analyses by AAS

Values in parts per million

N/D = not determined.

ANDEL ANALYTICAL SERVICE

JOB: ..1673/78

Semi-Quantitative Spectrographic Analysis Schemes A1,A2,A3,A4,A5, A7,A8 & A9

BATCH.....

Form 60

Results in ppm unless otherwise stated. Detection limits in brackets.

Sample No	205740	205744	205745	205746				Sample No	205740	205744	205745	205746			
A1 Ba (200)								A2 In (10)							
Be (1)								Pb (1)							
Ce (300)								Sb (30)	200	X	200	X			
Co (5)								Sn (1)	X	1	X	2			
Cr (20)								Zn (20)							
La (100)															
Mn (10)	800	30	50	70				A3 Au (3)	X	X	X	X			
Mo (3)	30	10	20	20				P (100)	X	300	1000	3000			
Nb (20)								Te (20)							
Ni (5)								Tl (1)							
Sc (3)															
Sr (50)								A4 Li (1)							
Ta (100)								Na (50)							
Th (100)															
Ti (100)								A5 Cs (30)							
V (10)	100	300	50	200				K (5)							
W (50)	X	X	X	X				Rb (10)							
Y (10)															
Yb (1)								A7 Hg(0.15)							
Zr (10)															
								A8 B (3)							
A2 Ag (0.1)															
As (50)	500	X	X	X				A9 Al (100)							
Bi (1)	X	X	X	X				Ca (100)							
Cd (3)	20	X	X	X				Fe (100)							
Cu (1)								Mg (100)							
Ga (1)								Si (100)							
Ge (3)								U (5000)							

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Spectrographic analysis of these shales for certain other metals (Table II) produced no results of special interest.

Elsewhere on the traverses, Mn-coated reddish greywacke-mudstones (locality 6) are very similar to rocks exposed by trenching on the soil grid further north (Freytag, 1977).

Weathered igneous float at locality 9 is described as a dolerite, (Appendix A).

One sample from a trench on the soil grid (Loc.10) has been interpreted in thin section (Appendix A, 206405) as a fine ? andesitic tuff. The evidence is tenuous and it doesn't seem to warrant further investigation.

#### SILVER FALLS PROSPECT

This prospect has now been located accurately on an aerial photograph.

Co-ordinates of Silver Falls were derived photogrammetrically by the Department of Lands in Hobart, in an effort to relate its position to the eastern boundary of EL 22/74.

As a result and within the limits of accuracy of this method, it is assumed that Silver Falls is very close (probably within 100 metres) to the common licence boundary between EL 22/74 and EL 12/72.

Ground survey will be necessary to resolve the position accurately.

Mineralisation at Silver Falls is exposed within a steeply inclined, 25-30 metre thick volcanics unit, flanked at the west by fine, micaceous sandstone, and at the east by spotted porphyry and east-dipping shales.

Rock samples 206408A and 206409 (Appendix A) support earlier results (Freytag, 1976) that the Silver Falls volcanics are of sodic rhyolitic composition, commonly altered and devitrified. Tuffs including ignimbritic varieties seem to predominate over extrusive (and possibly intrusive) phases.

The mineralised rock forming the Silver Falls waterfall is uniformly fractured and permeated with very fine-grained galena. Sphalerite and chalcopyrite are seen rarely in hand specimen. Minor amounts of pyrite occur in small, finely

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crystalline patches.

The petrographic description of rock sample 206409 (Appendix A) shows that galena was introduced together with quartz and carbonate.

A number of spot samples from Silver Falls have been analysed :-

<u>Sample No.</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Mn</u>	<u>Ag</u>	<u>Rock type</u>
206407	190	520	190	>10,000	2	Seepage crust.
206408A	60	>10,000	1,300	3,750	15	Tuff with galena
206408B	20	3,700	60	1,800	2	" " "
206408C	5	6,750	370	1,500	5	" " "
206409	20	>10,000	410	1,450	5	Rhyolite with galena
206410	<2	1,520	120	1,650	<2	Spotted porphyry
206411	30	1,100	850	7,250	<2	? Tuffac. shale
206412	<2	740	80	650	<2	Porphyry
206413	<2	180	150	850	2	Sandstone

(Analyses by A.A.S).

While these figures do not provide an average Pb tenor at this prospect, they do suggest that the Cu, Zn and Ag association with Pb is very minor.

#### EXPENDITURE

The following expenditures were incurred by EL 22/74 during the six months from August 1977 to February 1978.

Geochemistry	\$ 1,410
Geology	1,052
Geophysics	-
Gridding	-
Tenure	165
Sundries	868

TOTAL \$ 3,495

CONCLUSIONS

- (1) The results of geological and geochemical follow-up to an area of stream sediment anomalies west of Lynch Creek, provide sufficient evidence to conclude that the anomaly source is in black pyritic shales enclosing bodies of massive quartz with which small concentrations of copper, lead, zinc and silver mineralisation are associated.

This type of mineralisation does not warrant intensive investigation.

The unaltered black shales appear not to be mineralised.

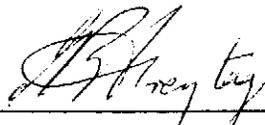
- (2) The uniformity and extent of lead mineralisation exposed at the Silver Falls offers some potential for further investigation. However, the absence of other metals (reflected also in the surrounding stream sediment geochemistry) is not attractive.

It is necessary that the prospect and licence boundary be located accurately before further work is undertaken.

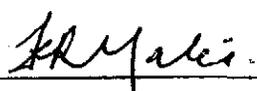
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Progress Report on Exploration  
for the year ending July, 1977.

Submitted by:

  
I.B. Freytag  
Geologist

Endorsed by:

  
K.R. Yates  
Chief Geologist

APPENDIX A

Petrographic descriptions of four rock specimens from EL 22/74. Sample locations are shown in Figure 2. Nos. 206405 and 206406 are from the follow-up area west of Lynch Creek. Nos. 206408A and 206409 are from the Silver Falls prospect.

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**CENTRAL MINERALOGICAL SERVICES PTY. LTD.**Date 11.1.78**SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)**Job No. CMS 78/1/3 Date Received: 5.1.78Reference Order No. 1615Sample No. 206409Nature of Sample: Hand specimen**DESCRIPTION** SECTION No. 23176**a. Hand Specimen:**

Pale, fine-grained rock, with galena veinlets. K-stain test negative.

**b. Microscopic:**

This is a porphyritic sodic rhyolite, somewhat altered but with quite well-preserved diagnostic textures.

An unusual feature is the absence of quartz phenocrysts. Albite occurs as small, random phenocrysts, generally extensively sericitised but occasionally fresh. The groundmass is now composed of small interlocking quartz patches, ultrafine sericite, and possible poorly-defined albite; it was almost certainly glass, and shows devitrification-textures throughout. It is not known whether the rock was extrusive or a shallow intrusive; for petrographic reasons the latter alternative is preferred.

The rock is cut by random, narrow veins of quartz-carbonate, accompanied by fine galena. Carbonate rhombs and fine galena grains (< 0.2mm, generally much smaller) are also scattered through the rock; the mineralisation, which is similar to that in 206408A, is clearly epigenetic.

H.W. Fander, M.Sc.**IDENTIFICATION**

206409

**PORPHYRITIC SODIC  
RHYOLITE, WITH GALENA**

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## CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 11.1.78

## SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
206408A
BRECCIATED WELDED RHYOLITIC TUFF WITH GALENA

Job No. CMS 78/1/3 Date Received: 5.1.78Reference Order No. 1615Sample No. 206408ANature of Sample: Hand specimen

## DESCRIPTION

SECTION No. 23175

## a. Hand Specimen:

Pale, fine-grained rock with very thin sulphide (?galena) veinlets. K-feldspar stain test negative.

## b. Microscopic:

Devitrification and introduction of new minerals have obscured some details, but the rock is very probably a brecciated welded tuff of rhyolitic composition

The rock consists of small (< 3 mm) angular fragments of welded tuff; these show well-preserved fine, sometimes complex, flow-textures and relict shard textures and were evidently vitric tuffs which were capable of plastic deformation and flow due to welding. Adjacent tuff fragments have differing orientation of flow-banding but are of quite similar composition. They are now devitrified and consist of fine quartz and sericite.

Veins and random patches of clear albite and quartz, with associated carbonate (?dolomite-ankerite) are very common throughout.

It is possible that brecciation occurred in the final stages of the formation of the welded tuff, or at a later, separate stage.

Fine galena occurs in crosscutting, irregular veinlets with carbonate; these veinlets are contemporaneous with, or perhaps slightly younger than, the quartz-albite-carbonate phase.

H.W. Fander, M.Sc.

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## CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 11.1.78

## SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/1/3 Date Received: 5.1.78  
 Reference Order No. 1615  
 Sample No. 206406  
 Nature of Sample: Hand specimen

<b>IDENTIFICATION</b>
206406
DOLERITE

**DESCRIPTION** SECTION No.23174

## a. Hand Specimen:

Grey medium-crystalline rock. Distinctly magnetic.

## b. Microscopic:

This is a dolerite; it is fairly fresh for this type of rock, and may be one of the jurassic dolerites of Tasmania.

The major components are randomly orientated laths of plagioclase, rather poorly twinned and thought to be calcic andesine; interstitial to subophitic patches of pigeonite pyroxene are fairly abundant, and magnetite crystals are common. Occasional patches of brown, oxidised chlorite-serpentine are thought to represent altered olivine. In addition to the magnetite, thin tabular crystals of ilmenite occur sporadically.

Secondary chlorite has developed throughout, from pyroxene, and is partly oxidised.

Superficial limonite staining has proceeded along fractures.

The fabric indicates that the rock is a minor intrusive.

H.W. Fander, M.Sc.

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**CENTRAL MINERALOGICAL SERVICES PTY. LTD.**

Date 11.1.78

**SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)**

Job No. CMS 78/1/3 Date Received: 5.1.78  
 Reference Order No. 1615  
 Sample No. 206405  
 Nature of Sample: Hand specimen

<b>IDENTIFICATION</b>
206405
?ANDESITIC TUFF

**DESCRIPTION SECTION No. 23173**

a. Hand Specimen:  
Brown, fine-grained, soft argillaceous rock.

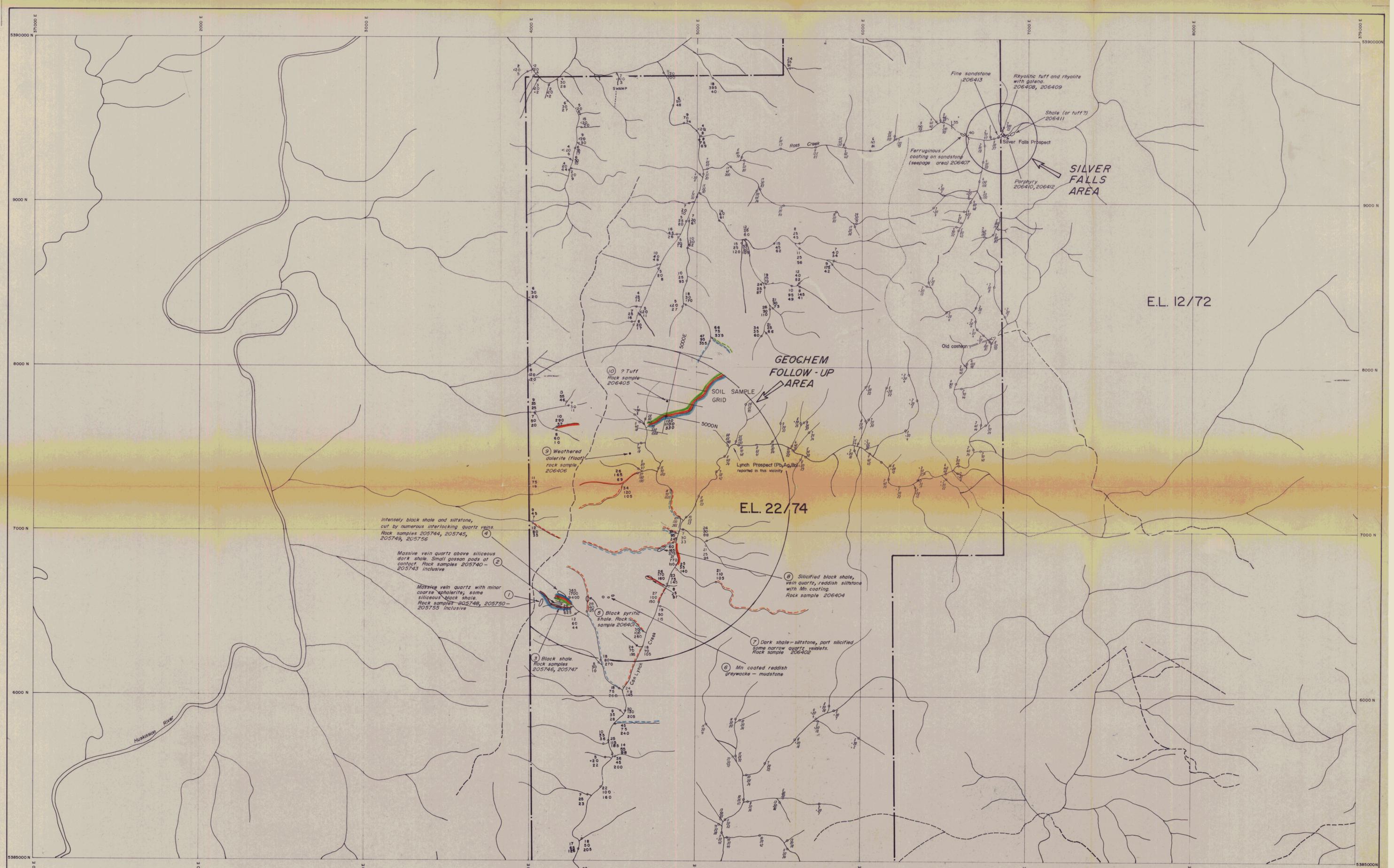
b. Microscopic:  
This rock is thoroughly altered and ferruginised; thus many diagnostic features are no longer identifiable. However, it is believed that the rock was a fine-grained tuff, probably of andesitic composition; its uniformity and faint bedding suggest subaqueous deposition.

If the interpretation is correct, this could possibly be correlated with subaqueous andesitic tuffs of the Crimson Creek formation.

The constituents are small (average size = 0.05 - 0.1 mm) angular and splintery grains of brownish, altered (oxidised) chlorite which itself represents altered ?glass, cloudy isotropic grains of ?altered feldspar, leucoxene patches, quartz splinters, and pervasive limonite-goethite.

By a combination of negative evidence and observable features, the interpretation of this rock as a tuff seems reasonable; an "andesitic" composition is a compromise and it may have been basic, since the quartz may well have had a different source.

H.W. Fander, M.Sc.

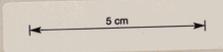


E.L. 12/72

E.L. 22/74

REPRESENTATION OF ANOMALIES

	1st Order	2nd Order	3rd Order
Cu	≧ 165 ppm	< 165, > 110 ppm	> 55, ≤ 110 ppm
Pb	≧ 240 ppm	< 240, > 160 ppm	> 80, ≤ 160 ppm
Zn	≧ 600 ppm	< 600, > 400 ppm	> 200, ≤ 400 ppm



LEGEND

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See Plate MOC 3/375 for references

FIGURE 2

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<b>COMINCO EXPLORATION PTY. LTD.</b>	
NORTH WEST TASMANIA DUNDAS TROUGH MARIONOAK E.L. 22/74	
Follow up to Gecchem Anomalies LYNCH CREEK AREA	
Drawn by	Traced by E.D.
Checked by	
Location code	K55/5
Scale	1:10,000
Date	May 1976
Plate	MOC 3/385