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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

West Coast Mines

EXPLORATION LICENCE NO. 12/72 - BULGOBAC

Progress Report on Exploration Activity

21st November, 1982 to 3rd May, 1983.

Geology Dept.
Report No. 165 MD

R.A. Sainty,
May, 1983

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1. INTRODUCTION

This report covers work on Exploration Licence No. 12/72 by Electrolytic Zinc Company of Australasia Limited between 21st November, 1982 and 3rd May, 1983.

The work was carried out on behalf of a Joint Venture between E.Z. and Getty Oil Development Co. Ltd., which was initiated in April, 1976. A description of the Licence can be found in E.Z. Report No. 128 - "Exploration undertaken in E.L. 12/72 during 1976-77".

2. PREVIOUS EXPLORATION

Details of all previous work on E.L. 12/72 have been reported in E.Z. Geology Department Report No's 128 (1977), 129 (1978), 130 (1979), 132 (1980), 137 (1981), 145 (1982), 149 (1982), 153 (1982) and 159 (1982).

3. ABBREVIATIONS

Standard symbols and terminology used on geological plans and sections are detailed on Plate 1 of E.Z. Report No. 137 - "E.L. 12/72 Progress Report on Activity July, 1980 to June, 1981".

4. EXPLORATION UNDERTAKEN 21ST NOVEMBER, 1982 - 3RD MAY, 1983

All work in this period was carried out in the Boco area and was aimed at delineation of a quartz-sericite-pyrite alteration zone beneath the thick fluvioglacial cover.

4.1. Intended Programme

The trial percussion rotary bedrock sampling programme undertaken during November, 1982 by Overland Drilling Co., was to be continued by Associated Diamond Drillers (Zeehan). This would enable comparison of different drilling techniques and provide geological and geochemical

data over a wide area in a test for along-strike extension of the alteration 'host rock'.

It was hoped that A.D.D's 'casing advancer' drilling technique would significantly improve the rate of penetration and thereby reduce the cost of returning a bedrock core sample. This second phase of the Stage I trial programme was to be confined to existing track and road access in two across-strike traverses north of the known extent of intensely silicified-sericitised-pyritised volcanics.

If A.D.D. was more effective in returning a bedrock core sample then they would mount their drilling system on a hiredbombardier for a full programme of target delineation. This Stage 2 programme would continue until variation in the form, intensity or geochemistry of alteration was recognised such that diamond drilling could be located to best test the host rock for stratiform sulphide horizons. In the absence of any such variations, the shape and extent of this buried alteration zone should be known sufficiently well to enable across-strike long diamond drill holes to be confidently sited to test for ore horizons. The diamond drilling would constitute the third and final stage of the exploration at Boco.

4.2. Work Completed

The second phase trial bedrock sampling programme was commenced by A.D.D. on 24th March, 1983. Only three holes (Holes 8, 9 and 10) were completed in the four weeks of drilling to the close of the period.

Samples obtained from Holes 4, 5, 8 and 9 were submitted to C.M.S. for petrographic examination.

4.3. Results Received (Refer to 1:5,000 scale "Drill Hole Locations" plan A2-521-0099 and C.M.S. Report 83/4/28 appended to this report)

Hole 8 (A.M.G. 383,795E; 5,386,860N) was sited in order to test the eastern limit of the quartz-sericite-pyrite alteration intersected in Hole 5 (drilled in November, 1982), 230m to the west.

The hole reached bedrock at 97m and was completed at 103.5m after 9 days of drilling hampered by lack of preparedness by A.D.D. with insufficient equipment to hammer, and breakdowns, on top of the great depth - triple that previously encountered.

Bedrock consisted of a weakly sheared, cream-coloured sericitised dacitic crystal-vitric ash-flow tuff with no pyrite (sample 48397) with two doleritic intrusives within the 6.5m drilled. The sample closes off the alteration to the east of Hole 5 and confirms the linear pattern expected by an extrapolation of the previous results in the vicinity of the 1977 DDH BBP 207, 1 km to the south. The zone has not yet been closed to the west beyond the conical hill of alteration outcrop but this will not be possible by existing access.

Holes 9 and 10 are the first holes in the across-strike traverse of the possible northwards extension of quartz-sericite-pyrite alteration. Intersection of intense alteration on this track would extend the presently known 1km strike length by an additional 400m.

Hole 9 (A.M.G. 383,775E; 5,387,185N) reached bedrock at 90m and was completed at 96.3m after 10 days of drilling with severe bit wear and a melt-down of the HQ roller bit casing advancer when water was lost through the casing advancer shell because of excessive wear at a thin point. The gravels and slurry in front of the bit were fused into a steel and glassy rock plug some 10cm thick.

Bedrock consisted of a pale pink but leached amygdaloidal felsic-intermediate lava with weak alteration but no pyrite (sample 48398).

Hole 10 (A.M.G. 383,635E; 5,387,325N) was sited 200m west of Hole 9 on a straight-line extrapolation of the two hills of alteration outcrop. Bedrock was encountered at 99m depth and the hole was completed at 106m after 7 days of drilling. The final 30m of overburden was stiff dark laminated clay with occasional cobble bands to 3m thickness. A secondary objective of this hole was to reach bedrock in NQ in order to judge the feasibility of drilling long angled holes as an alterative to this present programme, and this was achieved.

Bedrock consisted of dark green ?autobrecciated lava or ?ash-flow tuff, possibly silicified in part but lacking the intense alteration sought.

4.4. Discussions and Conclusions

Conclusions from the second trial test drilling programme are as follows:

i) Assessment of Drilling Technique

1. A.D.D's 'casing advancer' drilling system is not a rapid penetration technique. It is limited to use with a tricone roller bit which makes only slow progress through thick layers of cobbles and pebbles. The system does not provide for casing to be pulled down behind either a percussion hammer or a diamond core bit. Percussion hammering is limited to the first stage of drilling because the hammer will not fit within the HQ casing outer shell.

2. The 'casing advancer' system did greatly reduce the amount of diamond drilling required with consequent savings in diamond bit wear. Bit wear was severe after the change from roller bit casing advancer to NQ core barrel was made. (The limit of the casing advancer is the durability of the casing shoe bit.) On the first two holes a reduction to AQ size was required to reach bedrock when the NQ bit was exhausted (Hole 8 required two AQ bits, Hole 9 three AQ bits). On the third hole NQ reached bedrock but a new AQ bit was required to drill on to take the sample. In contrast, whenever an inexpensive roller bit had worn out a rapid replacement was made via the overshot with the hole (and hole size) preserved.

   Eliminating the roller bit advancer step and drilling entirely by diamond coring would probably be possible if the hole was commenced by HQ core barrel, but any time-cost saving would be lost if only a single bit was lost.

3. Had these three holes been drilled by Overland Drilling Co., none of them would have been successful.

ii) Geological Data

1. Hole 8 has closed off the zone of intense alteration to the east of Hole 5 and confirms the linear pattern suggested by Hole 1 to 4 in the vicinity of the 1977 DDH BBP 207, 1km to the south. The zone has not yet been closed to the west beyond the conical hill of alteration outcrop.

   A width of 200m is indicated by the Holes 1-4 and DDH BBP 207 in the south.

2. Holes 9 and 10, located 400m north of the known extent of intense alteration, have not intersected an on-strike extension. It is possible that the host rock horizon has been stepped over in the 200m interval between these two holes. Hole 10 is located on a straight line extrapolation of the two hills of alteration outcrop but may have missed the host rock horizon by as little as a few metres on the western side to give a hangingwall-type rock, or alternatively, the rocks in either Holes 9 or 10 might be massive less-altered rock within the host horizon sequence. At Que River (refer to Figures 1 and 2) the pyritic dacitic pyroclastics host horizon is 200-300m wide but is interrupted by less altered, non-pyritic, dacitic rocks.

   These bulbous, wedge-shaped units of massive dacitic lavas and intrusives occupy a central 100m-wide area, close to the massive Zn/Pb sulphide lens, within the 300m-wide host horizon in the mine area. These units commonly have autobrecciation around their margin.

3. The C.M.S. report reveals that rocks from Holes 4 and 8 are quite thoroughly sericitised $\pm$ silicified - they are entirely sericite $\pm$ quartz rocks but have little or no pyrite. Both occur on the interpreted footwall (east) side of the intense quartz-sericite-pyrite horizon and may characterise footwall-style alteration at Boco.

546009

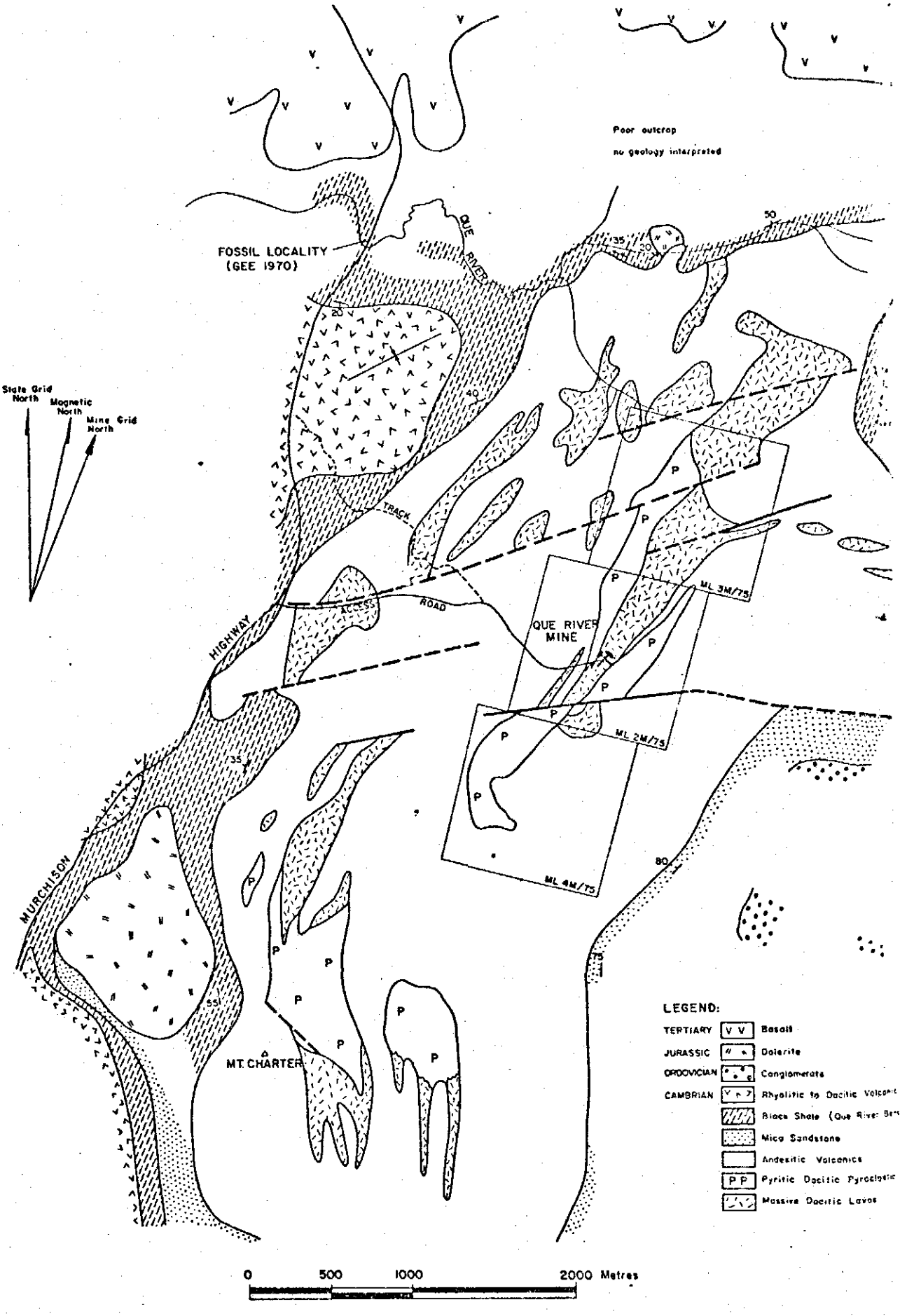


FIGURE 1. GEOLOGICAL SUMMARY MAP. QUE RIVER AREA.

(Courtesy Aberfoyle Explorat

5 cm

546010

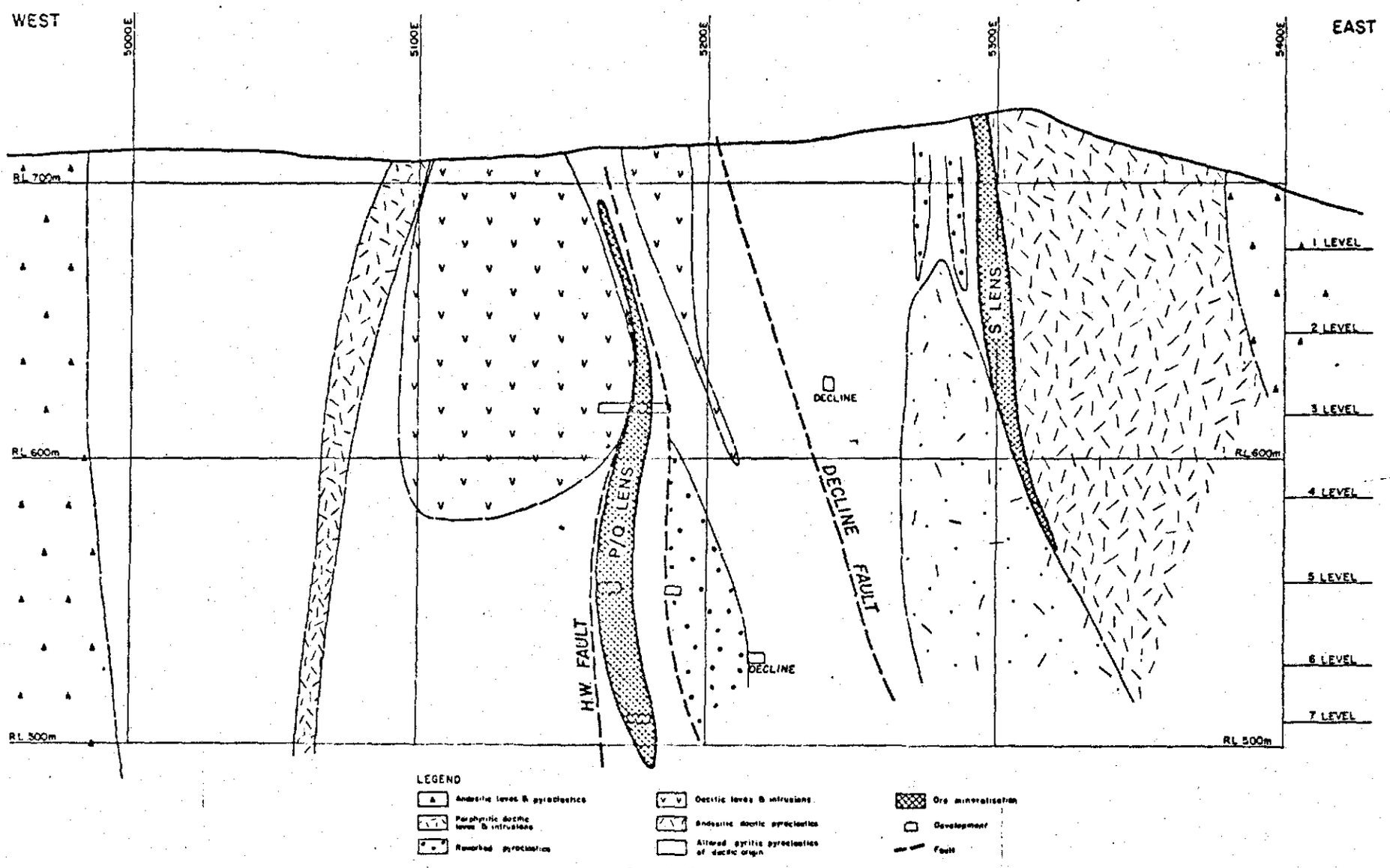


FIGURE 2 QUE RIVER MINE

GEOLOGICAL SECTION 7400N.

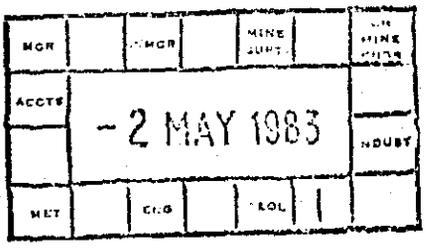
APPENDIX

Report C.M.S. 83/4/28

546012

Central Mineralogical Services

39 Beuloh Road
Norwood, S.A. 5067
Telephone 42 5659



The Manager
Attn. Chief Geologist
Electrolytic Zinc Co. of
Australasia Ltd.
West Coast Mines
P.O. Box 21
ROSEBERY / TAS. 7470

29th April, 1983

REPORT CMS 83/4/28

YOUR REFERENCE:	Order No. 900432
DATE RECEIVED:	28th April, 1983
SAMPLE NOS.:	48394 - 48399
SUBMITTED BY:	R. Sainty
WORK REQUESTED:	Petrology

for

H.W. Fander, M. Sc.

REPORT CMS 83/4/28

Five samples of split diamond drill core were received for urgent petrological examination, and results are compiled in the attached table. Descriptions incorporate data from microscopic examination of representative thin-sections and offcuts, and include interpretative comments.

Summary

All five samples are representative of a sequence of quartz-sericite altered volcanics. Primary compositional detail is obscured but, on the basis of relict features, the suite can be subdivided into two groups representing relatively indermediate (48394, 48396, 48398) and relatively acid (dacitic-rhyolitic, 48395, 48397) volcanics respectively.

Intermediate rocks are typically devitrified pitchstones (felsites) and include lava-like and vaguely relict fragmental-textured types. This group tends to be quartz-amygdaloidal and, mesoscopically, the siliceous amygdales may be confused with phenocrysts.

The acid group comprises entirely fragmental rocks of subaerial character,* although this may in part reflect the limited sampling.

Alteration features are rather consistent with development of quartz-sericite ± pyrite-chlorite assemblages. The bulk of alteration predates a mild phase of shearing and sporadic semi-contemporaneous quartz veinlets. Pyrite is of restricted occurrence within quite similarly altered rocks, but occurs both within the intermediate and acid volcanics, the apparently localised distribution thus seems to reflect a stratigraphic or structural control.

Close stereobinocular examination of thin-sections suggested pyrite to be the only sulphide phase present. Thus, in the absence of assay data, mineragraphic examination was considered unwarranted.

D. Cowan, B. Sc.

This comment is unwarranted: CMS use the term ignimbrite (see sample 48397) to include both welded and unwelded ash flows – these rocks are unwelded (D Cowan, pers. comm).

Sample No.	Classification - Composition	Fabric	Accessories	Comments
48394 (T.S. 45788) Hole 4	Altered Felsite. Variably Fe-stained, microcrystalline quartz, sericite aggregates with disseminated quartz(-sericite) amygdales, minor sericitised feldspar phenocrysts, quartz crystal fragments. Minor quartz veins.	Felsitic lava-like, weakly flow-structured with vague relict fragmental features. Incipiently sheared.	More or less pervasive quartz-sericite veinlets. Leucoxenised opaques, minor trace oxidised pyrite,	Silicified/sericitised ?dacitic pitchstone, weakly quartz-amygdal, lava-like, but conceivably a thoroughly welded vitric(-cryste tuff. Affinities with 48390, 483
48395 Hole 5	Altered Tuff. Framework of angular, thoroughly silicified/sericitised felsitic lava and ill-defined tuff clasts, sporadic sericitised ?collapsed pumice clasts. Similarly altered fragmental matrix. Pervasive fine pyrite.	Randomly sorted, weakly flow-structured fragmental, vaguely fragmented-shardy matrix. Weakly sheared.	Leucoxenised opaques. Sporadic pre-tectonic quartz-sericite and late quartz veinlets.	Dacitic-rhyolitic fragmental, conceivably flow-brecciated ignimbr but detail obscured by devitrifi ion, marked quartz-sericite-pyri alteration, shearing.
48396 Hole 5	Altered Amygdaloidal Pitchstone. Frequent sericitised feldspar, minor sericitised, pyritised ?amphibole phenocrysts, frequent quartz amygdales in a sericitised/pyrite-stained felsitic groundmass.	Flow-structured, strongly porphyritic/amygdaloidal with a homogeneous microfelsitic matrix. Incipiently sheared.	Conspicuous leucoxenised opaques. Frequent stressed quartz-sericite veinlets, minor late quartz veinlets.	RElatively sericitic alteration pervasive fine to ultrafine pyri In contrast to 48395, this rock texturally homogeneous, lava-lik and intermediate.
48397 Hole 8	Altered Ignimbrite. Sericite with minor microcrystalline quartz, disseminated chlorite-stained sericite pseudomorphs of feldspar crystals/fragments, minor quartz crystals/fragments, sericitised lithic clasts.	Flow-structured, shardy (eutaxitic), moderately flow-brecciated. Weakly sheared.	Leucoxenised opaques.	Thoroughly sericitised "dacitic' vitric(-crystal) ignimbritic tuf with accessory feldspar-pseudomorphous chlorite, partly sheare into crude lenses. Unmineralised
48398 (T.S. 45792) Hole 9	Amygdaloidal Felsite. Disseminated sericite-stained/albitised feldspar phenocrysts, quartz amygdales in a moderately silicified/sericite-stained felsitic groundmass. Frequent quartz-sericite veinlets.	Moderately flow-structured homogeneous felsitic (devitrified). Moderately stressed.	Leucoxenised opaques. Sporadic sericite veinlets (postdating, locally displacing quartz-sericite veinlets).	Moderately silicified/sericitise felsic intermediate ("leuco-andesitic") pitchstone. Quartz amygdaloidal in common with 4839 48396.
	*48390, 48391 are the samples of intensely quartz-sericite-pyrite altered 'felsite' from DDH PSP 207. See Report CMS 82/7/20			

546014

5 388 000 mN

5 387 000 mN

5 386 000 mN

383 000 mE

384 000 mE

MURCHISON HIGHWAY

EMU BAY RAILWAY

Inferred Fault

interbedded rhyodacitic lavas ash flow tuff and volcanogenic sediment

BOCO SIDING

Hole 1 · Hole 2 · Hole 3 · Hole 4 · Hole 5 · Hole 6 · Hole 7 · Hole 8 · Hole 9 · Hole 10

BBP 207 · BBP 209 · BBP 208

8720E · 8840E · 8840E ? · 8945E · 9000E · 9020E · 9080E · 9120E · 9150E · 9280E · 9280E · 9450E · 9450E · 9450E · 9450E · 9480E · 9480E · 9530E · 9600E · 9600E · 9640E · 9680E · 9680E · 9710E · 9730E · 9730E · 9748E · 9780E · 9820E · 9830E · 9840E · 9840E · 9920E · 9960E · 9960E · 9970E · 9980E · 10050E · 10080E · 10100E · 10130E · 10160E · 10165E · 10200E · 10280E · 10300E · 10320E · 10520E · 10640E · 10640E · 10700E · 10700E · 10800E · 10810E · 10878E · 10970E · 11055E · 11400E · 11400E

14040N · 14360N · 14680N · 14860N · 14840N · 15000N · 15160N · 15320N

5 cm

Intense silica - sericite - pyrite alteration

Thorough sericite ± silica alteration (weaker but complete)

546015

ELECTROLYTIC ZINC CO. OF A'ASIA.	E.L.12/72TAS.
BOCO GRID Drill Hole Locations	
Scale 1:5000	Survey R.A.S.
Drawn : Nik	Date : 6.5.1983

Detail Sheet A2-521-0099

83-2005

1514