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Electrolytic Zinc Company of Australasia Limited

West Coast Mines

BULGOBAC EXPLORATION LICENCE

EL 12/72

Progress Report on Activity
October 1977 - October 1978

MICROFILMED

OPEN FILE

J.H.A. Mill

Geological Department
Report No. 129

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APPENDICES

Appendix A Scintrex Report TAS-056 (See Report 78-1257)

A brief report on a test survey at Que River, West Coast of Tasmania, on behalf of the Electrolytic Zinc Company of Australasia Limited.

Copies to: Mines Department of Tasmania
7/8/78

Getty Oil Development Company Limited
1/3/78

Appendix B Scintrex Report TAS-051 (See Report 78-1271)

Comments on further electrical induced polarisation surveys over the Boco Grid, near Rosebery, Tasmania, on behalf of the Electrolytic Zinc Company of Australasia Limited.

Copies to: Mines Department of Tasmania
7/8/78

Getty Oil Development Company Limited
22/11/78

Appendix C Geox Profile Over Anomaly XVI

Appendix D Petrological Descriptions of Selected Rock Samples From the Bulgobac Area - Central Mineralogical Services P/L, 1973

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1.0. PREVIOUS WORK

All previous work conducted on EL 12/72 is recorded in E.Z. Geological Department Report No. 128 - "Report on Exploration Undertaken in the Bulgobac Exploration Licence 12/72" by N.H. Hanson, October 1977.

This report has been compiled from notes written by N.H. Hanson before he resigned from E.Z. in April 1978.

2.0. SUMMARY OF EXPLORATION ACTIVITY OCTOBER 1977 - OCTOBER 1978

The geological investigation of the Northern and Southern portions of EL 12/72 are treated separately as they represent two separate exploration approaches.

2.1. Northern Area

Ground follow-up of two Barringer Input Airborne E.M. anomalies (CS-27A and CS-27B) was carried out. Work included repairing the northern access track, establishing a base camp and cutting 20.52kms of grid line. An E.I.P. Depth Sounding was completed over E.M. anomaly CS-27A on line 20160N and a single line of gradient array I.P. was completed over the same line.

2.2. Southern Area

Track construction gained access to the Boco Grid Extension. Grid lines were cut and pegged and a geophysical survey consisting of gradient array I.P.,

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apparent resistivity and ground magnetics was undertaken over the new lines.

Scintrex time domain dipole-dipole I.P. was used to further assess anomalies III, VIII, XI, XIII, XVI and XX while anomaly XVI was checked using Geox frequency domain dipole-dipole I.P.

Regional mapping was continued in the western and southern areas of the E.L.

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3.0. NORTHERN AREA

(Refer to Locality and Progress Plan 1:50,00 scale Plate 1, and Geological Fact and Interpretation Plan 1:10,000 scale Plate 2)

3.1. Access

The northern access track was repaired but remained unsuitable for four wheel drive vehicles. Access along this track was facilitated by a J5 Bombardier and a field camp was established near the northern end of the track.

3.2. Line Cutting

A grid totalling 20.52kms was cut over Input E.M. anomalies CS-27A and CS-27B (refer to Plate 1). The grid was designed so that each anomaly was at the centre of a gradient array I.P. spread.

3.3. Geology

(Refer to Geological Fact and Interpretation Plan 1:10,000 scale Plate 2)

Earlier workers had noted acid volcanics, possibly ash flow tuffs, in the Que River to the north-east and to the south of the gridded area. Other rock units recorded include sediments, predominantly shales, along the railway line and a few occurrences of quartz-feldspar porphyry in the immediate vicinity of the grid. Tertiary basalt caps the hills to the north and east.

The northern access track cut a distinct quartz-feldspar porphyry south of the Bulgobac River, but north of the river the only rocks intersected were

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glacial and fluvioglacial deposits.

Grid mapping revealed basaltic boulders along the south-eastern edge of the grid. An ironstone grit outcrop at 20320E, 19360N is probably of fluvioglacial origin.

From grid mapping and aerial photo interpretation it is believed that the gridded area covers a sequence of fluvioglacial sediments (up to 200m thick) deposited by the Que River when its southern access to the Boco-Farm Creek drainage system was blocked by glacial moraine during the Pleistocene Period. Today the Que River is starting to erode into the glacial deposits and is now draining into the Huskisson/Hatfield drainage system.

3.4.1. Geophysics

(Refer to Appendix A - Scintrex Report TAS-056)

Geological mapping of the gridded area suggested that input anomalies CS-27A and CS-27B could have been caused by surficial conduction and thus an E.I.P. depth sounding (Schlumberger Expander) was used to test the thickness of the fluvioglacials over anomaly CS-27A. A single line of gradient array I.P. was completed over CS-27A on line 20160N.

3.4.2. Results

Analysis of the depth sounding data suggests a depth of fluvioglacial overburden of 90 to 120 metres. Further, the resistivity of the bulk of this section of material is estimated to be between 20 to 27 ohm/metre and has a chargeability back-

ground of 3-4 millivolts/volt. The gradient array data also shows low chargeability and resistivity. The normal to fast decay form indicates that electromagnetic coupling is not the cause of the low chargeability.

It can be concluded that the input anomaly CS-27A almost certainly arises from within this thick "low resistivity" section of overburden and it is likely that anomaly CS-27B is caused by the same rock unit.

3.5. Conclusions

3.5.1. Input anomalies CS-27A and CS-27B have been adequately explained as surficial features associated with fluvioglacial deposits and swamps.

3.5.2. The regional geology of the northern area has not been adequately examined. Mapping of access, especially a traverse along the Que River, is needed to define further areas of interest. This mapping should take place in summer when more up to date aerial photographs are available.

3.6. Recommendations For Future Work

3.6.1. It is recommended that regional mapping of the northern area be continued with traverses down the Que River and along tracks which have not been adequately mapped.

3.6.2. No further follow-up of input anomalies CS-27A and CS-27B is recommended.

4.0. SOUTHERN AREA (Refer to Plate 1)

4.1. Access

A track was constructed to provide access from the railway crossing north of Boco to the centre of the Boco Grid Extension. A short track was cut to link this to the track to anomaly XIII.

A rough track was cut from the west Boco grid access track westward to the top of a large un-named hill at 5,387,820N, 380,430E A.M.G.

The H.E.C. have constructed an all-weather road through the area to provide access for power line construction.

4.2. Line Cutting

A total of 17.5kms of grid line was cut on the western side of the pre-existing Boco grid.

4.3. Geology

(Refer to Plates 2, 3 and 4, and Appendix D Petrological Descriptions of Selected Rock Samples From the Bulgobac Area by C.M.S. Pty. Ltd.)

Regional mapping at 1:10,000 scale was carried out on most tracks in the area, the E.B.R. and the Que River north of Boco siding. A tentative grouping into units has been made and is discussed below.

Unit 1 : Dacitic lavas and intrusives

These are tentatively correlated with the Mt. Black

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volcanics and are described in detail in E.Z. Geology Report No. 128.

Unit 2 : Volcanics - dominantly pyroclastics

This broad group of variable volcanics outcrops to the west of unit 1 and is possibly overlain by it. Field relationships are obscure because of poor outcrop. Unit 2 consists predominantly of acid pyroclastics and rhyolites with minor coarse grained agglomerates and ash flow units. Local thin bands of intermediate rocks occur and these may represent folded beds of unit 1 or merely differentiation within unit 2. Thin bands of reworked tuff and sandstone occur on the western flank of this unit, indicating a subaqueous environment for at least part of its evolution. Field evidence indicates that the unit is folded into a north-east plunging anticline along an axis that runs just east of the E.B.R.

Unit 3 : Sediments - sandstones, siltstones and shales

Unit 3 consists predominantly of feldspathic, quartz poor sandstones and siltstones with subordinate shales and minor conglomerate. It overlies the acid volcanics of unit 2 in the west, where basal(?) conglomerates can be found along the contact. Field evidence has not established whether the contact is conformable or disconformable. The sediments contain local acid-intermediate tuffaceous beds and flow banded rhyolites indicating the presence of active volcanism during deposition. Further, north-west of Boco Siding, the sediments appear to interfinger with a volcanic horizon similar to unit 2.

The sediments have been broadly folded into structures trending and plunging NNE. Near Burns

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Peak, the west limb of a syncline appears to have been faulted out by the Marionoak Fault against acid volcanic lavas and breccias of unit 2. Small pods of quartz feldspar porphyry have been intruded along the fault.

Unit 4 : Quartz-feldspar porphyry

This distinctive unit consists of quartz phenocrysts (2-5mm dia) and smaller feldspar phenocrysts in a finer grained groundmass. At the contacts it contains numerous pebbles and fragments of the enclosing rock (sediments and/or volcanics). It occurs as a thick intrusion (up to 1 1/2 km wide) in the central and northern part of the E.L. but lenses out to the south. Classic "lit par lit" structures are seen where the porphyry intrudes sediments. A magnetic anomaly of up to 150 gammas above background is broadly conformable with the intrusive mass.

The intrusives are thought to be either late Cambrian or late Devonian in age.

4.4. Geophysics

(Refer to Plates 6-15 and Appendices B and C)

4.4.1. Magnetics

A proton magnetometer survey was carried out over the West Boco Grid Extension.

4.4.2. I.P.

Some 15 1/2 kms of gradient array I.P. was carried out over the West Boco Grid Extension. In addition, six dipole-dipole setups over anomalies located by the original (1976) gradient array survey were read. A further line of frequency domain dipole-dipole I.P.

was completed over anomaly XVI by Geoex. These surveys, together with the original (1976) survey, have completely covered units 1 and 2 with gradient array I.P. with the exception of a small triangle of volcanics in the south-eastern corner of the E.L.

4.4.3. Results

The gradient array I.P. survey found no anomalies akin to those observed over classical pyritic-lead-zinc mineralisation. The observed induced polarisation is extremely low for the West Coast and is due to the absence of chargeable material (ie. mafic minerals) within the fresh rocks. Contour interpretations of all three properties (chargeability, resistivity and magnetics) show a similar strike and also show some degree of termination against grid ENE-WSW trending dislocations. These dislocations may represent faults or boundaries between flows and pyroclastics of different composition.

It appears that the 1977 gradient array survey has delineated further broad bands of slightly pyritic volcanics similar to those found by the 1976 survey and intersected by three diamond drill holes, BBP 207, BBP 208 and BBP 209.

The dipole-dipole survey over anomalies III, VIII, XI, XIII, XVI and XX produced similar results to the 1976 gradient array survey although with significantly less resolution at depth.

4.5. Discussion

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4.5.1. The Boco Grids - Units 1 and 2

With the exception of regional mapping, all work has been concentrated on exploring units 1 and 2 in the south-eastern portion of the E.L. While poor outcrop has hampered accurate definition of the volcanic units, a reasonable picture has been built up with the aid of grid mapping, magnetics and I.P. together with that information obtained from three diamond drill holes. Anomalies thought to be more significant were drilled and produced only trace base metal values. At present it is considered that one line of gradient array I.P. is needed to test part of unit 1 in the south-eastern corner of the E.L. A further line of dipole-dipole I.P. will help define anomaly V where a weak geochem response was found.

4.5.2. The Western Area Unit 3

West of the Boco grid, the thick sequence of sediments, the "Burns Peak" rhyolite and the intrusive porphyries have only been mapped in detail along road traverses. In order to define the regional geology of the western area, further mapping is necessary in specific localities. It is thought that two grid lines of $1\frac{1}{2}$ -2kms in length across the "Burns Peak" rhyolite and onto the sediments to the east and west should give adequate definition of this volcanic member. Further, the bulldozing of a track towards the old Silver Falls prospect from the northern end of the access track north of Burns Peak would greatly aid in the interpretation of the geology of the western area. This track would also allow access to the Silver Falls Pb-Zn prospect for further gridding and exploration work.

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4.5.3. The Porphyry - Unit 4

To date, most of the endeavour at Bulgobac has been devoted to the search for Cu-Pb-Zn deposits associated with the acid volcanics and sediments of units 1 and 2 and, to a lesser extent, to the sediments of unit 3. A large number of quartz porphyry intrusives, whose tin and tungsten potential has never been explored to our knowledge, occur within the E.L. boundaries. While these intrusives do not appear to intrude any calcareous sediments (no calcareous sediments have been mapped in the area), they do however have a marked magnetic signature, especially in the western part of the E.L., where air magnetic anomalies of ± 200 gammas are common. It has been suggested that a broad stream sediment sampling programme covering all streams cutting the sediment/porphyry contact would quickly define the potential of the intrusives.

4.6. Recommendations For Future Work

4.6.1. Boco grid line 13720N should be extended 2kms to the south-east so as to cover the dacitic lavas and intrusives of unit 1 which have not been covered by previous gridding. A geological programme of gradient array I.P., magnetics and soil sampling should be carried out over the line to complete work in the Boco area over units 1 and 2.

A line of dipole-dipole I.P. over anomaly V on line 12760N should be completed to further define this broad gradient anomaly.

4.6.2. Two grid lines should be cut off the access track

north of Burns Peak to help interpret the structure of that area.

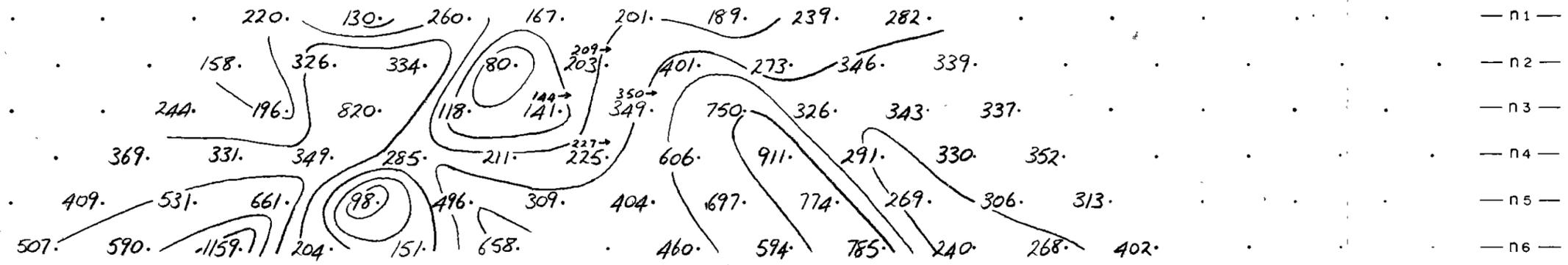
It is proposed to cut line 5,387,500N 700 metres west and 1500 metres east of the track, and line 5,388,300N 1500 metres east of the track. Ground follow-up of soil sampling, dipole-dipole I.P. and magnetics is recommended.

4.6.3. It is recommended to extend the access track north from Burns Peak, north-west to the vicinity of the Silver Falls Ag-Pb prospect to allow access for further work on that prospect in the future. Three 1km grid lines at 1km spacing should be cut over the northern extension of the Silver Falls prospect. The Exploration Programme should include dipole-dipole I.P., soil and stream geochemistry and geological mapping.

4.6.4. A stream sediment programme should be initiated to cover streams coming off the quartz-feldspar porphyry-sediments contact. These contacts may be favourable locations for Sn/W deposits and their potential has never been tested. It is envisaged that a panned concentrate will be necessary as Sn and W background values are expected to be very low.

9700^E 9800 9900 10000 10100 10200 10300 10400 10500^E

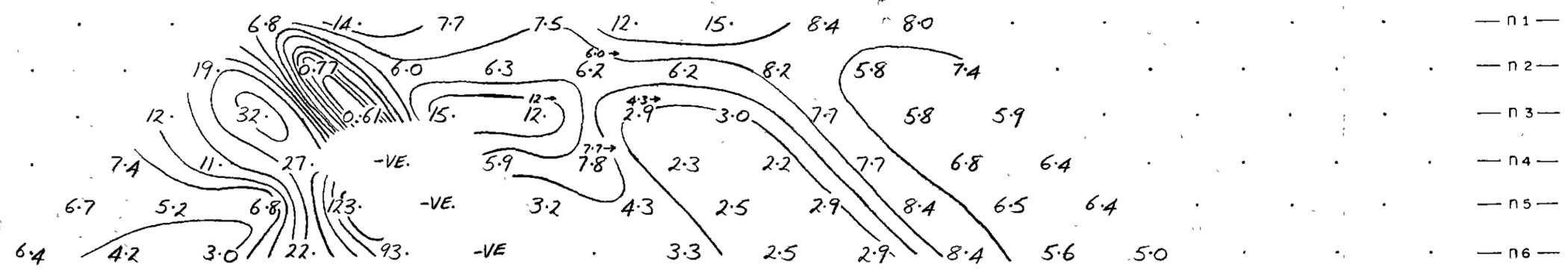
RESISTIVITY (OHM METRES)



n1
n2
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n5
n6

9700^E 9800 9900 10000 10100 10200 10300 10400 10500^E H.E.C. →

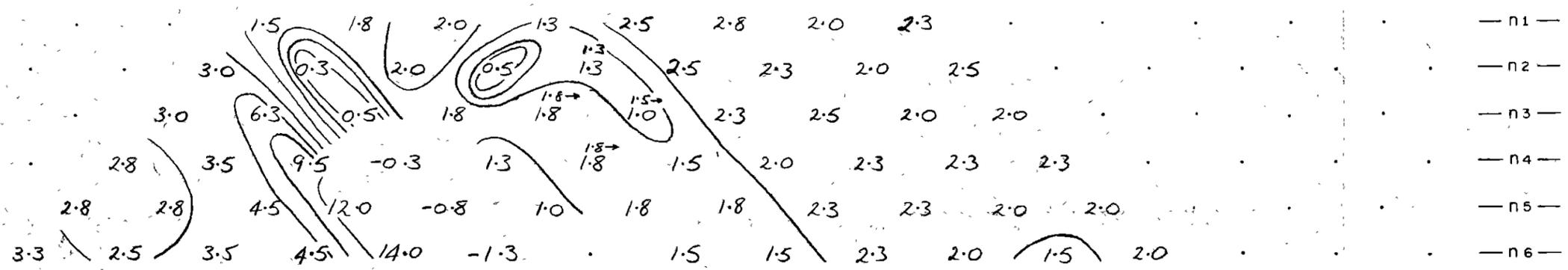
METAL FACTOR



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n6

9700^E 9800 9900 10000 10100 10200 10300 10400 10500^E

FREQUENCY EFFECT (%)

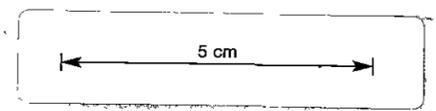


n1
n2
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INDUCED POLARISATION AND RESISTIVITY SURVEY

CLIENT ELECTROLYTIC ZINC
AREA BOCO ANOMALY 16
LINE NO 13880^N

SURVEY SPECIFICATIONS
ELECTRODE INTERVAL 50m
FREQUENCIES 0.3/2.5 Hz
ELECTRODES SINGLE ALFOIL
TRANSMITTER SERIAL NUMBER Tx 123
RECEIVER SERIAL NUMBER Rx 225
DATE OF SURVEY 23RD FEB. 1978
CREW LEADER J. Macher



APPENDIX C

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APPENDIX D

Petrological Description Of Selected
Rock Samples From The Bulgobac Area

by

Central Mineralogical Services Pty. Ltd.

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CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73
Reference Letter 8th May '73
Sample No. M 86
Nature of Sample: D.D. Core

IDENTIFICATION
M 86
Chlorite schist with ? magnesite veins and disseminated sulphides.

DESCRIPTION SECTION No. 11651

a. Hand Specimen:

Grey chloritic rock with numerous carbonate veinlets K stain negative, calcite stain negative.

b. Microscopic:

This is a chlorite schist with abundant intersecting "ptygmatic" carbonate veins. The rock probably represents an altered serpentinite, it contains disseminated sulphides.

Chlorite occurs largely as elongate foliae interstitial to carbonate patches and is an almost colourless slightly anomalous ? magnesian variety. Also interstitial to the carbonate are aggregates of microcrystalline silica. Traces of rutile occur throughout the chlorite and quartz as fine acicular grains. Coarser patches of leucoxenic TiO_2 occur disseminated throughout the section.

Carbonate veins appear to have been lightly stressed producing bent cleavage planes and slight biaxiality in individual grains. The carbonate itself is a relatively hard variety, thus possibly magnesite.

Overall the mineral assemblage points to a sheared and altered serpentinite.

Fine grained sulphides occur partly as thin (<10 μ) "foliae" penetrating chlorite cleavage traces and as coarser granules mantling leucoxenic aggregates. Mineragraphic examination may be warranted should this rock be associated with base-metal values.

D. Cowan, B.Sc.

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CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
P 171
Devitirified Perlitic Rhyolite-Obsidian.

Job No: 3 73/1/21 Date Received: 13-4-73

Reference Letter 13-4-73

Sample No. P 171

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11511

a. Hand Specimen:

Medium/fine grained pale quartzofeldspathic rock. K feldspar stain test positive (but minor).

b. Microscopic:

This is a devitrified rhyolite-obsidian; its fabric is typical and diagnostic.

The rock consists of devitrified material with very occasional altered feldspar phenocrysts. The phenocrysts have been completely sericitised and are unrecognizable.

The devitrified material has inherited the perlitic textures of the original rock, and consists of concentric shells of quartz and K feldspar; occasional polygonal textures occur and are doubtless tension cracks due to cooling.

Much of the fine devitrified feldspathic material has been sericitised. The original material has been sericitised. The original rock was probably a potassium silicate-silica glass with occasional phenocrysts.

H. W. Fender, M.Sc.

CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/4/21 Date Received: 12-4-73Reference Letter 13-4-73Sample No. P 176Nature of Sample: Hand specimenDESCRIPTION SECTION No. 11515

a. Hand Specimen:

Pale grey microcrystalline, porphyritic rock. Minor K feldspar staining.

b. Microscopic:

In contrast to the other rhyolites, this rock is quite markedly porphyritic. It is also more coarsely crystalline and is probably intrusive, though still containing typical devitrification textures.

It consists of almost completely sericitised euhedral phenocrysts of albite, and quite numerous smaller, corroded and notably rounded quartz patches. These are surrounded by wide rims of spherulitic-fibrous growths of devitrified material (dominantly quartz, albite and K feldspar). Small spherulites are also common. Interstitial areas contain argillic-sericitic material.

This rock, in addition to being of different fabric, is also far less potassic than P 215, P 199 and P 209. It is more likely to be a minor intrusive than an extrusive rock.

Some secondary epidote and chlorite occurs; these minerals are replective.

IDENTIFICATION
P 176
Porphyritic Rhyolite. <i>flow</i>

H. W. Fander, M.Sc.

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CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
P 177 ✓
Altered Porphyritic Sodic Microgranite.

Job No. GMS 73/4/21 Date Received: 13-4-73

Reference Letter 13-4-73

Sample No. P 177

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11510

a. Hand Specimen:

Pale, greenish, chloritised porphyritic igneous rock. K stain negative.

b. Microscopic:

dacitic intrusive

This is a porphyritic sodic rhyolite or microgranite: the grain size is variable, and the rock lacks characteristics typical of extrusive rocks. Thus the more appropriate term is perhaps porphyritic sodic microgranite.

Phenocrysts are common but very variable in size: they consist of albite crystals, singly and in clusters, and are fresh apart from small patches of epidote. They are set in a finely crystalline but rather poorly defined groundmass of quartz and albite with variable distribution. The plagioclase contains fine? iron oxide inclusions and thus has a faint yellowish colour. Leucoxised primary opaques occur.

Secondary interstitial chlorite is plentiful throughout, and granular, cloudy epidote (replacive) is also common.

The rock is much more likely to have been intrusive than extrusive.

H.W. Fender, M.Sc.

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CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CM 73/2/21 Date Received: 12-4-73

Reference Letter 12-4-73

Sample No. P 100

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11506

IDENTIFICATION
P 100
Quartz - Trachyte ✓

a. Hand Specimen:

Brown, fine - grained porphyritic rock with vesicles. K-feldspar stain test positive.

b. Microscopic:

This rock is extensively altered, making interpretation difficult, but it is regarded as a slightly porphyritic quartz - trachyte. Although its quartz content is slightly above 10%, it is texturally similar to a trachyte: in any case, some of the quartz is almost certainly secondary.

It consists of small phenocrysts of albite (partly replaced by quartz-sericite) and irregular patches of quartz, in a groundmass of fine feldspar laths and interstitial quartz. The feldspar laths are highly altered, but give a K stain they probably represent inverted enorthoclase--sanidine. The texture is trachytic.

Secondary minerals are scattered through the rock and include epidote, chlorite, sericite, "saussurite" (alteration product of feldspar). Occasional small, round vesicles occur, and are lined with quartz and chlorite.

The rock could be regarded as a rhyolitic type, but trachyte is preferable.

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H. W. Fendler, M.Sc.

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CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/4/21 Date Received: 18-4-73

Reference Letter 13-4-73

Sample No. P 181

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11507

IDENTIFICATION
P 181 ✓
Porphyritic Quartz <u>Trachyte.</u>

a. Hand Specimen:

Fine grained, pinkish, porphyritic rock. K feldspar stain test positive.

b. Microscopic:

This is a porphyritic quartz trachyte, quite possibly related to P 180, though slightly different *texturally* and compositionally. Alteration is not extensive.

The phenocrysts consist of sodic oligoclase (verging on albite); their pinkish colour is due to dusty iron oxide inclusions, and they show minor alteration to sericite. Occasional epidote patches also occur within them.

They are set in a groundmass consisting dominantly of matted feldspar crystals, probably inverted sanidine. Small, interstitial quartz areas are present. The groundmass contains fine, dusty iron oxide inclusions and fine leucoxene.

Occasional sericite pseudomorphs occur which were probably another species of feldspar. Vesicles are absent. Flow-banding is also absent, the phenocrysts show subparallel alignment. The rock is probably extrusive, but may be a minor or shallow intrusive.

H. W. Fender, M.Sc.

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CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/4/21 Date Received: 10-4-73
Reference Letter 13-4-73
Sample No. P 106
Nature of Sample: Hand specimen

IDENTIFICATION
P 186 ✓
Sericitised Trachyte/ Rhyolite.

DESCRIPTION SECTION No. 11509

a. Hand Specimen:

Fine grained white ~~soft?~~ kaolinitic, siliceous rock. K stain negative.

b. Microscopic:

An almost completely altered rock, which was originally a fine grained, prophyritic, probably extrusive acid igneous type. Quartz is not very common, and thus the rock was perhaps a quartz-trachyte, or a rhyolite.

Small quartz phenocrysts occur sporadically, and larger sericite pseudomorphs after feldspar crystals are fairly common. They are embedded in a fine groundmass of sericite and fine quartz; some of the quartz is almost certainly secondary.

The rock shows an orientated fabric which is probably relict flow-bending, though the sericitisation has observed or obliterated many diagnostic details. The sericitisation process has been pervasive, and was deuteric in nature, not simply a weathering phenomenon.

H. W. Fonder, M.Sc.

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CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
P 187
Porphyritic Rhyolite.

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 187

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11642

a. Hand Specimen:

Fine grained pinkish/grey porphyritic rock, K feldspar test positive.

b. Microscopic:

This is a porphyritic rhyolite, probably a tuff lava although alteration has destroyed the finer textural detail.

The phenocrysts consist of sodic oligoclase, close to albite in composition, with abundant ultrafine (<<1 μ) inclusions of ? Fe-oxide imparting a pink colouration in hand specimen. They are incipiently veined by chlorite and replaced by sericite. Inclusions of leucoxene are not uncommon and several of the phenocrysts have irregular, partly embayed margins. They tend to occur in clusters (glomeroporphyritic texture).

The groundmass consists of fine grained felsitic quartz-potash feldspar intergrowth. It is variable in the amount of quartz present and also in fabric, sometimes with a poorly defined flow fabric, elsewhere more granular or with unorientated feldspar micro-lites. This fabric is reminiscent of a tuff lava.

Secondary, fine grained chloritic aggregates have replaced much of the groundmass and irregular patches of mosaic textured (replacive) quartz and chlorite are present. Associated are sparse sericitic aggregates with leucoxenic opaques and granular quartz, apparently pseudomorphous after ? hornblende.

D. Cowan, B.Sc.

M.

125

216027

CENTRAL MINERALOGICAL SERVICES

Date 1-3-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/4/21 Date Received: 12-4-73

Reference Letter 13-4-73

Sample No. P 199

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11513

a. Hand Specimen:

Pale brown, fine grained, distinctly layered or flow banded, porphyritic rock.
K stain positive.

b. Microscopic:

Quite similar in composition and fabric to the previous rock, this is a devitrified porphyritic rhyolite. Its colour is due to ultrafine ? iron oxide within the feldspars, and is brown despite the presence of fine chlorite.

The rock consists of small, corroded phenocrysts of quartz, and generally small, euhedral phenocrysts of albite. The groundmass is composed of quartz and K feldspar, now relict vitric textures (perlitic and spherulitic textures). Interstitial fine chlorite occurs but is unevenly distributed, in layers probably related to flow-banding.

The rock is cut by veins of chalcedony and younger veins of mosaic quartz with traces of chlorite.

The banding of the rock is due partly to differences in crystallinity, partly to distribution of chlorite. It was most probably an extrusive rock.

IDENTIFICATION
P 199
Devitrified Porphyritic Rhyolite. ✓ <i>flow</i>

H. W. Fender, M.Sc.

026

216028

CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/4/21 Date Received: 18-4-73
 Reference Letter 13-4-73
 Sample No. P 205
 Nature of Sample: Hand specimen

IDENTIFICATION
P 205 ✓
Brecciated Quartz- Sericite Rock.

DESCRIPTION SECTION No. 11516

a. Hand Specimen:

Pale yellow-green, fine grained siliceous rock. K stain test negative.

b. Microscopic:

A rather featureless quartz-sericite rock, composed entirely of those two minerals.

Most of the quartz is typical vein quartz and occurs in veins with interpenetrating subhedral quartz crystals. Interlocking quartz patches are also common.

The sericite occurs as felted fine flakes; very occasional pseudomorphs after feldspar are present. Much of the sericite is finely intergrown with quartz.

The presence of pseudomorphs indicates that the original rock may have been a porphyritic, fine grained probably acid igneous type, thoroughly brecciated, sericitised and quartz veined.

H. W. Fender, M.Sc.

027

216029

CENTRAL MINERALOGICAL SERVICES

Date 1-2-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMG 73/4/21 Date Received: 12-4-73

Reference Letter 13-4-73

Sample No. P 208

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11517

a. Hand Specimen:

Buff coloured, fine grained rock. K feldspar stain positive.

b. Microscopic:

9 An almost non-porphyrific, devitrified rhyolite. Very occasional euhedral phenocrysts of strongly sericitised albite crystals are set in a rock with typical and characteristic devitrification textures. There are numerous small (0.2mm) spherulites, set in a poorly defined, vaguely polarizing interlocking mass of K feldspar and quartz.

Some interstitial sericite occurs, and there are sericite veinlets through the rock. Flow features are weak or absent, but the rock was probably extrusive.

This rock closely resembles some of the other rhyolites, with minor differences in fabric and composition. They are probably all of similar origin or are genetically related.

H. W. Fender, M.Sc.

IDENTIFICATION
P 208 ✓
Aphyric Devitrified Rhyolite <i>HW</i>

CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
P 209
Devitrified Porphyritic Rhyolite. ✓ <i>Haw</i>

Job No. CMS 73/4/21 Date Received: 1-4-73

Reference Letter 13-4-73

Sample No. P 209

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11514

a. Hand Specimen:

Fine grained white rock with pink phenocrysts. K feldspar stain test positive.

b. Microscopic:

This rock is closely similar to P 199; the colour difference in hand specimen is insignificant. The rock is a devitrified porphyritic rhyolite. Banding/layering is almost absent.

Quartz phenocrysts are smally corroded, and scarce. Albite phenocrysts are euhedral and contain minute, dusty iron oxide inclusions causing the pink colour.

The groundmass is patchy, being more quartzose in some areas and more feldspathic (K feldspar) in others. It consists of fine quartz and K feldspar, and virtually no other minerals, and shows spherulitic and other devitrification textures. Minor argillic alteration has caused the white colour of the rock.

Very occasional small muscovite crystals occur, with associated chlorite and leucoxene.

U29

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 214

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11644

IDENTIFICATION
P 214
Silicified porphyritic rhyolite.

a. Hand Specimen:

Pinkish brown slightly banded porphyritic ? rhyolite, K stain positive.

b. Microscopic:

This is a silicified porphyritic rhyolite, essentially similar to but more markedly altered than the previous two specimens.

The poorly defined banding (hand specimen) is related to fine grained micaceous minerals (sericite, montmorillonite and green biotite) replacive of the groundmass. It reflects at least in part a primary flow fabric judging by a subparallel orientation of phenocrysts.

The phenocrysts consist predominantly of slightly bent and argillised oligoclase with scattered heavily resorbed microphenocrysts of quartz. Less altered portions of the groundmass consist of felsitic quartz-potash feldspar intergrowths, the two phases being somewhat variably distributed.

Quartz-rich portions of the groundmass grade into irregular aggregates and vein-like masses of granular to chalcedonic silica carrying scattered angular portions of the host rock and occasional chips of feldspar. The silicification appears to be a late-magmatic phenomenon probably grading into deuteric alteration (sericite etc.).

D. Cowan, B.Sc.

CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/4/21 Date Received: 12-4-73Reference Letter 13-4-73Sample No. P 215Nature of Sample: Hand specimenDESCRIPTION SECTION No. 11512

a. Hand Specimen:

Fine grained ~~pale pink~~/pale green rock. K feldspar stain positive (strong).

b. Microscopic:

A devitrified, slightly porphyritic rhyolite. Phenocrysts are not common, but consist of rounded, corroded quartz crystals and well-formed euhedral albite crystals.

The bulk of the rock consists of fine, rather vague interlocking patches of quartz and K feldspar. Relict textures indicate that much of this material was originally glassy. Occasional small spherulites are also present.

Interstitial patches between the subspherical, devitrified patches contain fine, semi-amorphous chlorite probably of late-magmatic origin; this gives the rock a greenish appearance, but where the chlorite is oxidised, the rock is pink.

It is probable that the rock was extrusive though flow-features are absent; it may have been a minor intrusive however, depending on field observations.

H. W. Fender, M.Sc.

031

216033

CENTRAL MINERALOGICAL SERVICES

Date 1-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CS 73/3/21 Date Received: 12-4-73

Reference Letter 13-4-73

Sample No. p 223

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11508

IDENTIFICATION
P 223 ✓
Highly Porphyritic Sodic Rhyolite

a. Hand Specimen:

Pale, coarse-grained fragmentary rock with black patches (? possibly tourmalinised).

K stain negative.

b. Microscopic:

An interesting rock, believed to be of unusual origin. It can be regarded as an extremely porphyritic sodic rhyolite (verging on trachyte). In hand specimen, some layering or preferred fabric is discernable. The predominance of coarse crystals and sparsity of fine groundmass suggests some form of crystal accumulation and/or "filter-pressing".

The coarse components are quartz and albite, often stressed, fragmented and incomplete. Interstitial material consists of much finer albite and minor quartz: the albite rims around the coarse crystals but is not in optical continuity with them. Large patches of dark green chlorite are present sporadically and represent a later stage of chloritisation.

The composition and fabric of the rock suggest several alternative origins. It could be a granitic crystal "mush" with a minor groundmass component, rapidly chilled in the final stages. It could conceivably be an extrusive rock, perhaps even fluidised. The field evidence may clarify the question. The rock is not regarded as extrusive at this stage.

comp. trachytic *capitol tuff*

H. W. Fender, M.Sc.

032

216034

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
P 242
Porphyritic Rhyolite.

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. # 242

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11647

a. Hand Specimen:

Grey porphyritic ? rhyolite, K stain positive.

b. Microscopic:

This is a porphyritic rhyolite essentially similar to P 243 (by inference also P 248).

Phenocrysts are common but only slightly clustered. They consist of oligoclase slightly veined and replaced by carbonate and chlorite, and resorbed slightly stressed quartz. Oligoclase is slightly kaolinitic probably due to incipient weathering; it is whitish in colour in contrast to the pink colouration in P 243.

The groundmass consists of quartz and fine grained potash feldspar with a patchy, variable, distribution. Fine grained bits of chlorite occur throughout and leucoxenised opaques are abundant in some patches. There are occasional replacive poikilitic aggregates of carbonate present. This appears to be a sideritic variety, locally accompanied by sericitic mica and leucoxenitic ? sphene.

D. Cowan, B.Sc.

033

216035

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 243

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11646

IDENTIFICATION
P 243
Porphyritic Rhyolite.

a. Hand Specimen:

Grey coarsely porphyritic ? rhyolite, K stain positive.

b. Microscopic:

This porphyritic rhyolite is possibly related to P 248 although it is darker in colour. The mineralogy and fabric of the two specimens are very similar. As previously this rock should possibly be regarded as intrusive.

The phenocrysts consist of oligoclase and quartz. The feldspar is pink in colour due to clouding with ultrafine (<<μ) Fe-oxide inclusions. The quartz is slightly strained and heavily embayed (bipyramidal in form) with included montmorillonitic aggregates showing relict perlitic structures. Phenocrysts tend to be clustered and flow fabrics are absent.

The groundmass consists of granular quartz and finer grained felsitic K feldspar. Fine grained primary opaques (? magnetite) are fairly abundant throughout. These together with traces of secondary green chlorite apparently impart the dark colour to the hand specimen. Minor sericitisation of feldspars has occurred.

D. Cowan, B.Sc.

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 246

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11645

a. Hand Specimen:

Pale grey, slightly flow textured porphyritic igneous rock, K stain negative.

b. Microscopic:

The feldspar phenocrysts in this porphyritic lava are indeterminate due to complete alteration to fine grained sericitic mica. Thus there is little to choose between the classifications of dacite and rhyolite. The former is perhaps more likely since the partly microcrystalline groundmass does not stain for potash but the evidence is partly negative.

Sericite pseudomorphs (minor chlorite is present) are accompanied by fairly abundant quartz phenocrysts and microphenocrysts. The quartz is of bipyramidal habit although strongly resorbed. Larger grains are slightly cracked and strained due to incipient stress the effects being less marked than in P 248. A few late-stage (tectonic) quartz veinlets are present.

The devitrified groundmass is partly sericitised, elsewhere consisting of very fine interlocking grains of quartz and feldspar. Skeletal, leucogenised opaques occur throughout and there are also abundant "trains" of very fine (1-2 μ) opaque granules. Semi-random, patchy, orientation of these features shows the groundmass to be "fragmental" due to flow- or autobrecciation. There is little evidence to suggest the rock is of pyroclastic origin.

D. Cowan, B.Sc.

IDENTIFICATION
P 246
Sericitised porphyritic dacite or rhyolite.

035

216037

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 248

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11643

IDENTIFICATION
P 248
Stressed Porphyritic Rhyolite

a. Hand Specimen:

Brownish porphyritic igneous rock, K feldspar test positive.

b. Microscopic:

This is a slightly stressed porphyritic rhyolite. The rock lacks extrusive characteristics and perhaps should be considered as intrusive, depending on the field evidence.

Phenocrysts are common and often coarse typically about 1-3mm. They consist of strongly embayed, inverted beta quartz accompanied by sodic oligoclase and tend to be clustered. Feldspar phenocrysts are slightly argillised, the quartz is strained and very slightly biaxial due to stress.

The groundmass consists of finely granular interlocking quartz and potassic feldspar with a felsitic appearance. There are occasional feldspar microlites and micro-phenocrysts present. Some sections of the groundmass have a patchy appearance possibly due to recrystallised spherulitic structures. Flow textures are absent.

Thin discontinuous quartz veins cut the rock. These carry leucoxenised opaques and are accompanied by sparse replacive aggregates of chlorite much of which is oxidised and Fe-stained. Chlorite aggregates also carry leucoxene and sparse microscopic (<10µ) crystals of anatase.

D. Cowan, B.Sc.

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73Reference Letter 8th May '73Sample No. P 254Nature of Sample: Hand specimenDESCRIPTION SECTION No. 11649

a. Hand Specimen:

Greyish fine grained altered porphyritic rock, K stain negative.

b. Microscopic:

This is a quartz-sericite rock thought to be a thoroughly sericitised rhyolite although this is based on very sketchy evidence.

The section consists almost wholly of quartz and sericitic aggregates with minor traces of leucoxene. Sericite occurs locally in aggregates clearly pseudomorphous after feldspar crystals or phenocrysts, elsewhere it occurs in smaller irregular patches interstitial to anhedral quartz grains. Thin intersecting quartz-sericite veins are frequent.

Leucoxene occurs partly as coarse clots possibly representing primary opques, also as finer grained aggregates occasionally with shapes reminiscent of anatase crystals.

Feldspar pseudomorphs are the only distinct relict feature present thus the contention that the rock was originally a rhyolite is mainly inferred from associated specimens.

D. Cowen, B.Sc.

031

216039

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
P 256
Porphyritic rhyolite.

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 256

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11650

a. Hand Specimen:

Greenish flow textured porphyritic acid igneous rock, K stain negative.

b. Microscopic:

This is a porphyritic rhyolite possibly related to P 214. Phenocrysts are not common and are relatively fine grained; they tend to form small clusters. The majority are oligoclase there being only sparse quartz phenocrysts present.

The bulk of the rock consists of semi-orientated quartz grains and interstitial felsitic potash feldspar. Argillic material (chlorite-montmorillonite) occurs throughout in small clots, imparting the greenish colour to the hand specimen. Minor leucoxic opaques are present.

Some of the quartz is of secondary or perhaps more likely of late-magmatic origin. This occurs in irregular to vein-like patches analogous to those of P 214. It is partly chalcedonic and elsewhere finely granular.

Of later origin are thin crosscutting straight walled quartz veins carrying aggregate of chlorite and ironstained green biotite. These include patches of goethite possibly derived from disseminated sulphide although there are no definitive boxworks present.

D. Cowan, B.Sc.

030

216040

CENTRAL MINERALOGICAL SERVICES

Date 29-5-73

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 73/5/13 Date Received: 16-5-73

Reference Letter 8th May '73

Sample No. P 257

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 11648

a. Hand Specimen:

Grey/patchy white ? fragmental rock, K stain positive.

b. Microscopic:

This peculiar rock is perhaps best termed a xenotuff, that is, a pyroclastic with a non-pyroclastic (sedimentary) component.

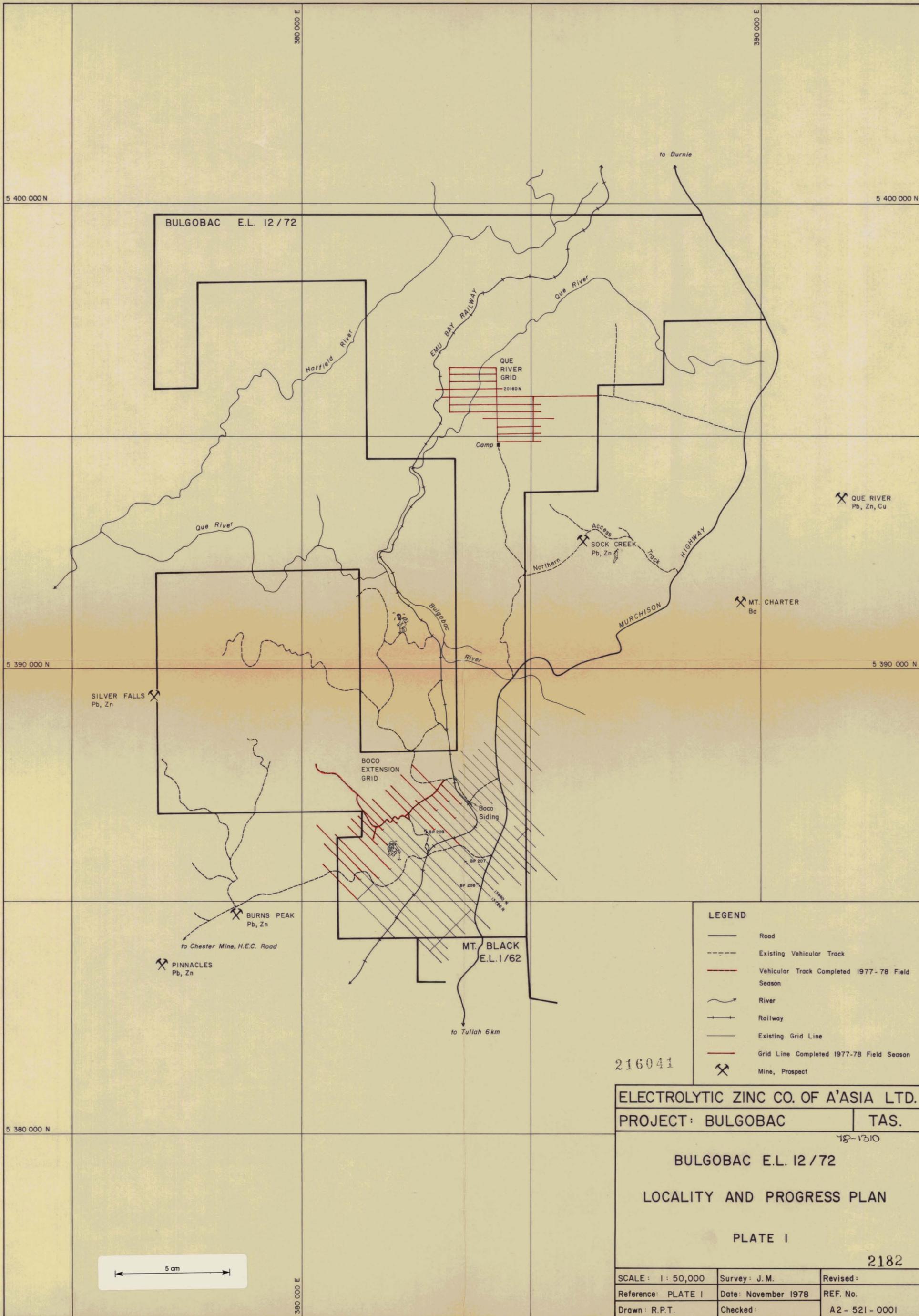
The rock has been somewhat argillised and subsequently ferruginised, thus the textural relationships particularly the primary fabric are partly obscure. It consists largely of goethite- and leucoxene-stained argillic material (? illite) with patches of quartz and sericite, felsitic feldspar and minor chlorite, appearing white in hand specimen against the greyer argillic portions of the rock.

The rock has a poorly defined fragmental appearance in thin section. Some of the quartz and feldspar grains are clearly of volcanic origin and on brief inspection the rock has the appearance of an altered rhyolite. Some argillic patches have relict shard-like shapes, elsewhere they have a sedimentary aspect and include detrital flakes of mica, chalcedonic radiolarian, and ? foraminiferal tests.

Thus the rock reflects an interplay of pyroclastic and sedimentary features.

D. Cowan, B.Sc.

IDENTIFICATION
P 257
Ferruginised, partly weathered acid xenotuff.



LEGEND

	Road
	Existing Vehicular Track
	Vehicular Track Completed 1977-78 Field Season
	River
	Railway
	Existing Grid Line
	Grid Line Completed 1977-78 Field Season
	Mine, Prospect

216041

ELECTROLYTIC ZINC CO. OF A'ASIA LTD.

PROJECT: BULGOBAC TAS.

18-1310

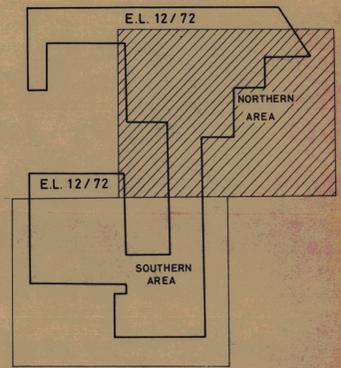
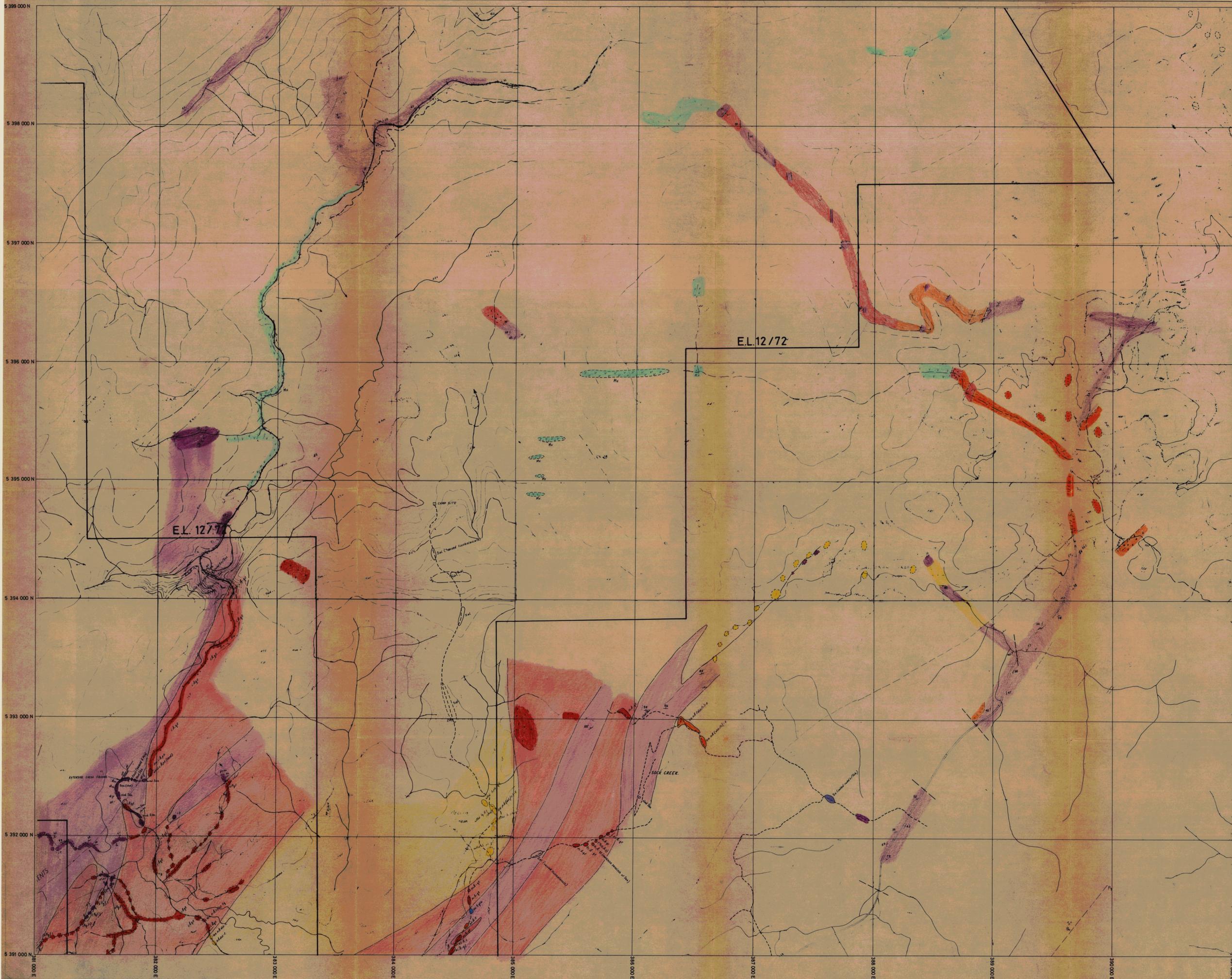
BULGOBAC E.L. 12/72

LOCALITY AND PROGRESS PLAN

PLATE I

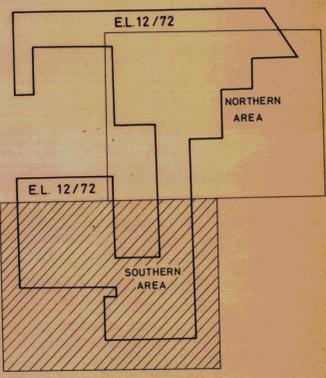
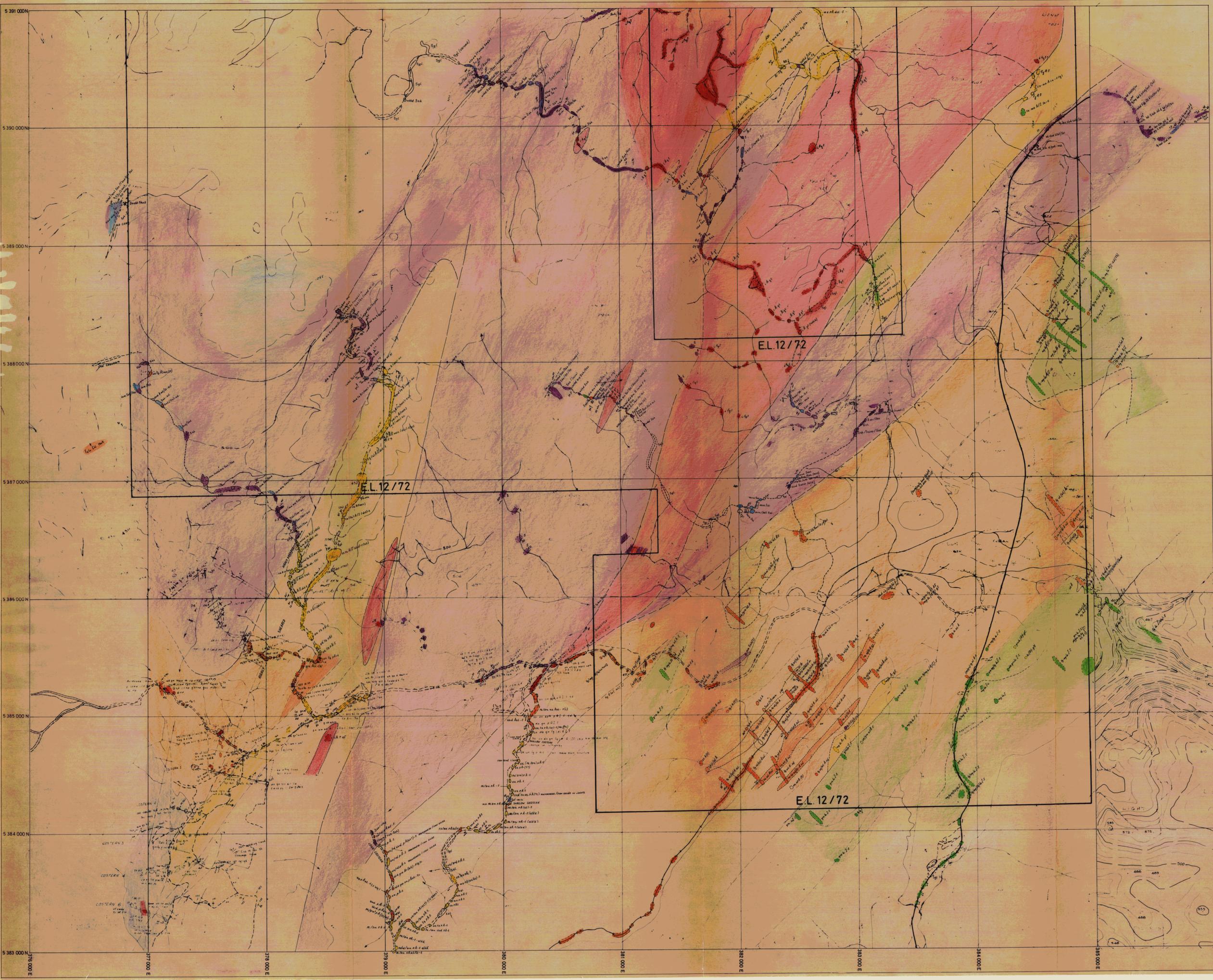
2182

SCALE: 1 : 50,000	Survey: J.M.	Revised:
Reference: PLATE I	Date: November 1978	REF. No.
Drawn: R.P.T.	Checked:	A2 - 521 - 0001



SPECIAL PLANS
 5 cm
 216042

ELECTROLYTIC ZINC CO. OF ASIA, LTD.
 PROJECT: BULGOBAC E.L.12/72 TAS.
 SPECIAL 1:10 000 SCALE PLAN 78-1510
 SHOWING GEOLOGY
 FACT AND INTERPRETATION
 DECEMBER 1978
 SCALE: 1:10 000 REF. NO.
 REFERENCE: DATE: 4/10/78 DRAWN: GEOLOGY: J.M. PLATE 2
 2183



SPECIAL PLANS
 5 cm

ELECTROLYTIC ZINC CO. OF ASIA. LTD.
 PROJECT: BULGOBAC EL.12/72 TAS.
 SPECIAL 1:10 000 SCALE PLAN
 216043
 SHOWING GEOLOGY
 FACT AND INTERPRETATION
 DECEMBER 1978
 SCALE: 1:10 000 REF. NO.
 REFERENCE: GEOLOGY N.H.I.M. PLATE 3
 DATE: 4/10/77 DRAWN:

2185

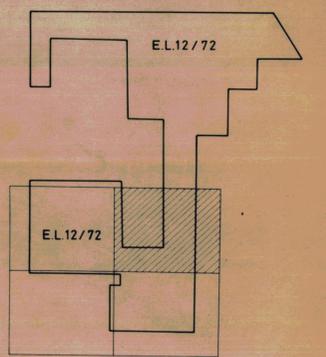
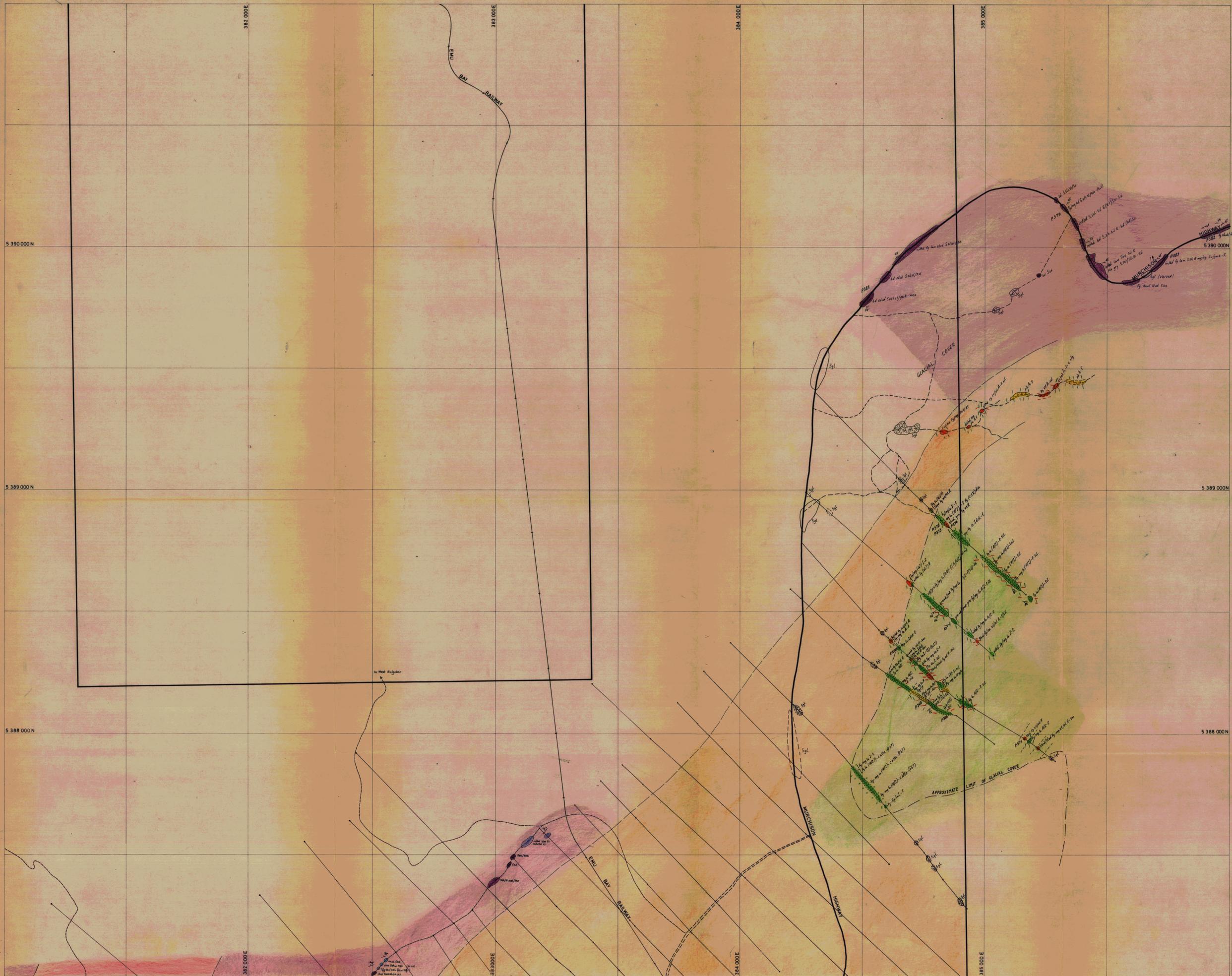


PLATE 4

216044

ELECTROLYTIC ZINC CO. OF ASIA, LTD.

PROJECT: BULGOBAC EL.12/72 TAS.

BOCO SIDING 18-1310

GEOLOGY

BOCO NORTH SHEET

SCALE: 1:5000

REFERENCE

DATE: 8/9/76 DRAWN: R.A.H. GEOLOGY: N.H.H.

REF. NO. A0 521-0016

2186

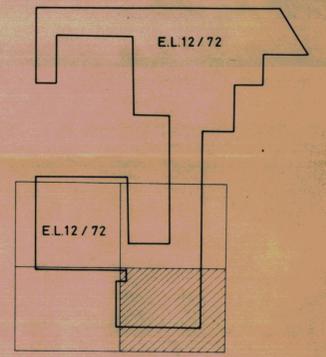
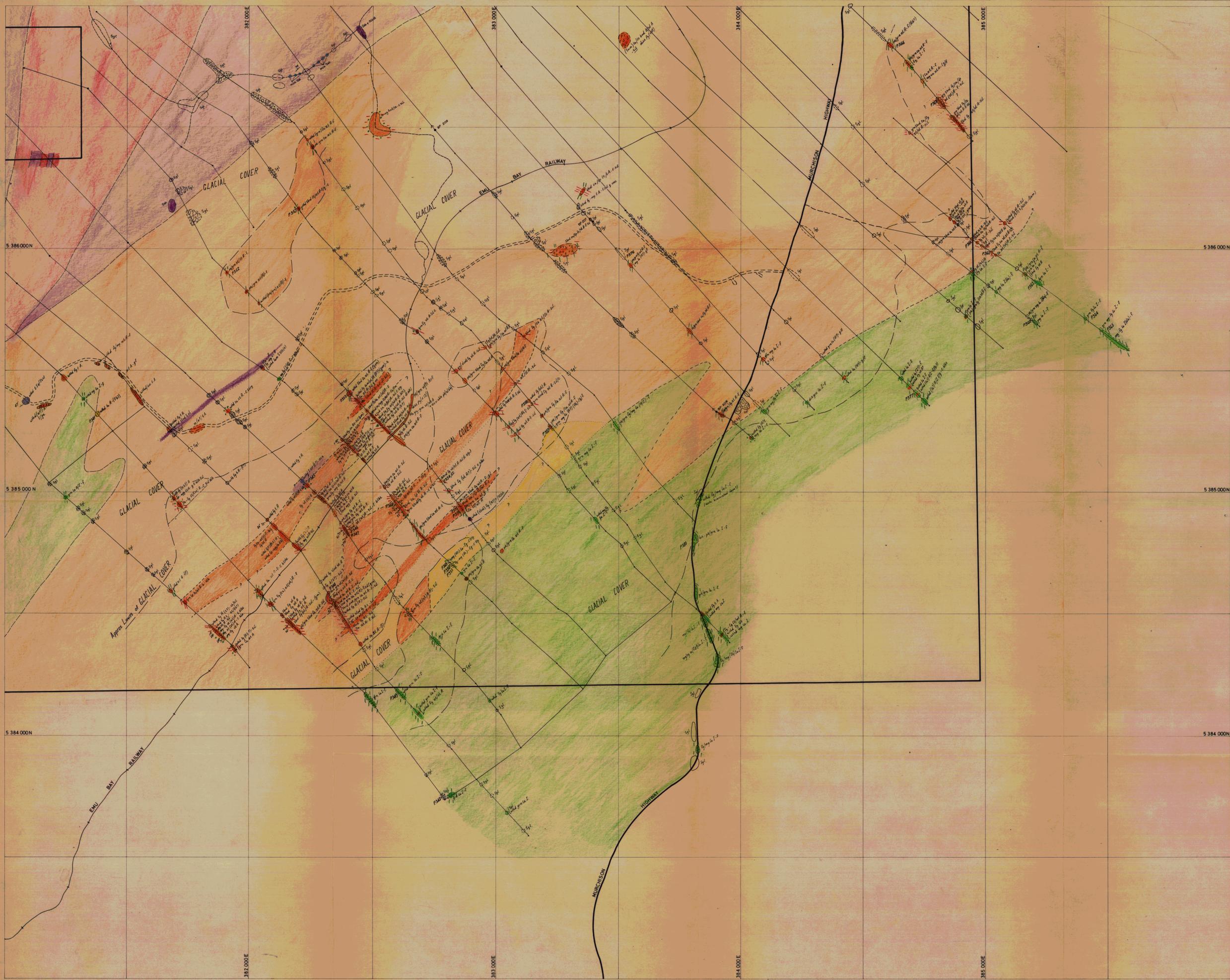


PLATE 5

ELECTROLYTIC ZINC CO. OF ASIA LTD.
 PROJECT: BULGOBAC EL12/72 TAS.

BOCO SIDING 78-1310

GEOLOGY 216045

BOCO SOUTH SHEET
 SCALE: 1 : 5 000
 REFERENCE
 DATE: 8/9/76 DRAWN: R.A.H. GEOLOGY: N.H.H. REF. NO. AO 521-0017

2187

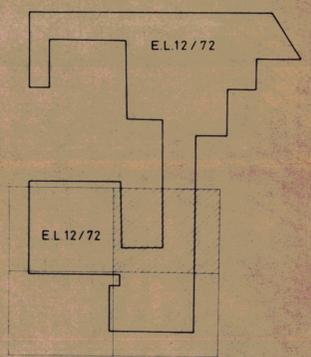
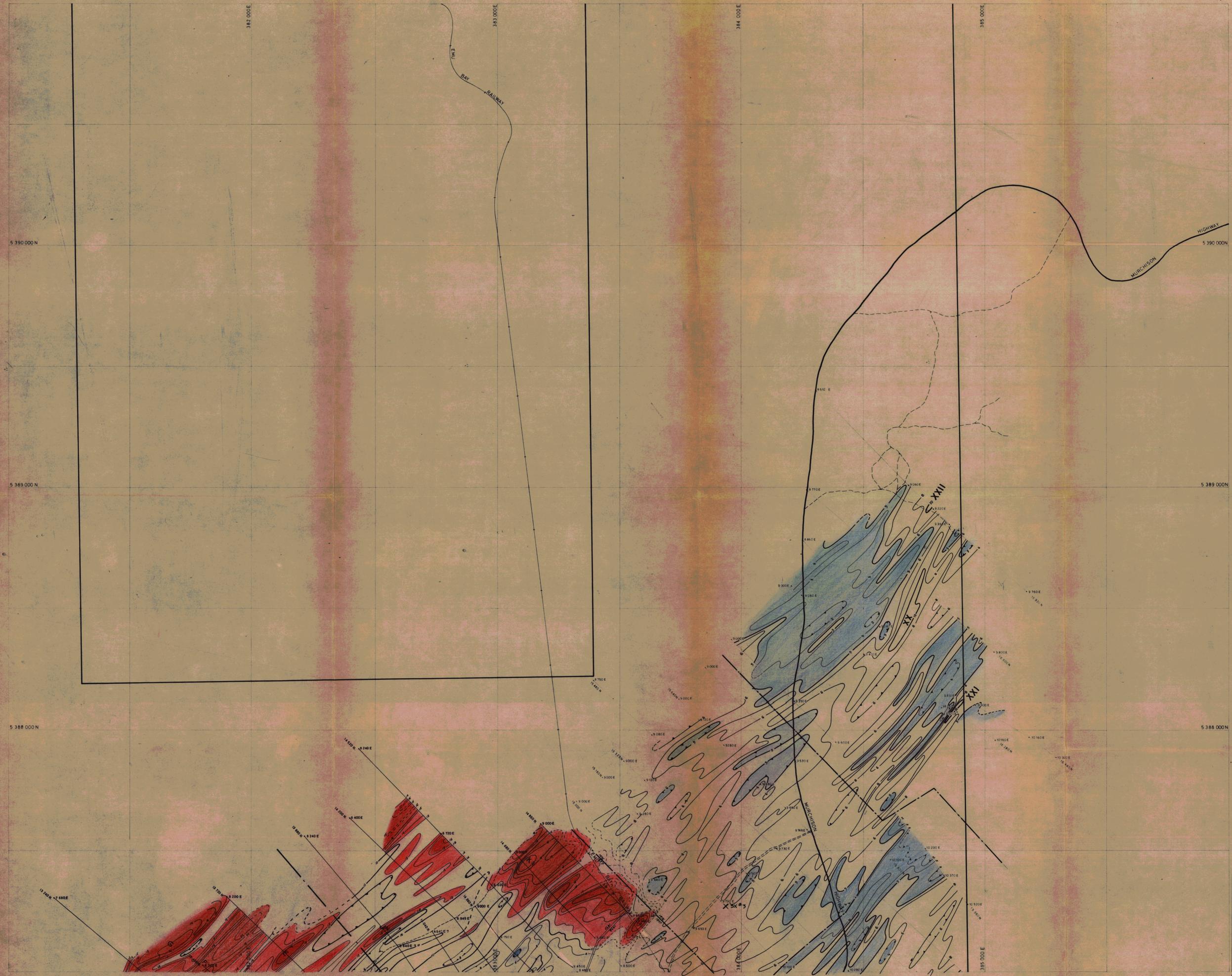


PLATE 6
 216046

ELECTROLYTIC ZINC CO. OF ASIA, LTD
 PROJECT BULGOBAC EL12/72 TAS
 CORRECTED BOCO GRID SHOWING
CHARGEABILITY CONTOUR PL
 (IN MILLISECONDS)
 BOCO NORTH SHEET 2187
 SCALE 1:5000
 REFERENCE REF NO.
 DATE 8/9/76 DRAWN R.A.H. GEOLOGY N.H.H. AO 521-0014
 REVISED OCT 1977
 JOB # TAS-051 SCINTREX SHT 1 of 3 PLATE
 SCINTREX PTY, LTD, SHEET 1 OF 2 PLATE

2188

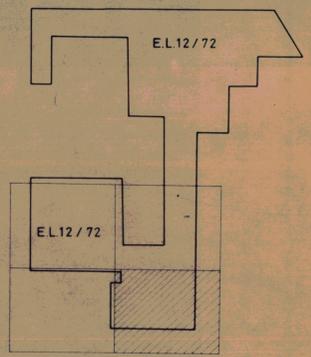
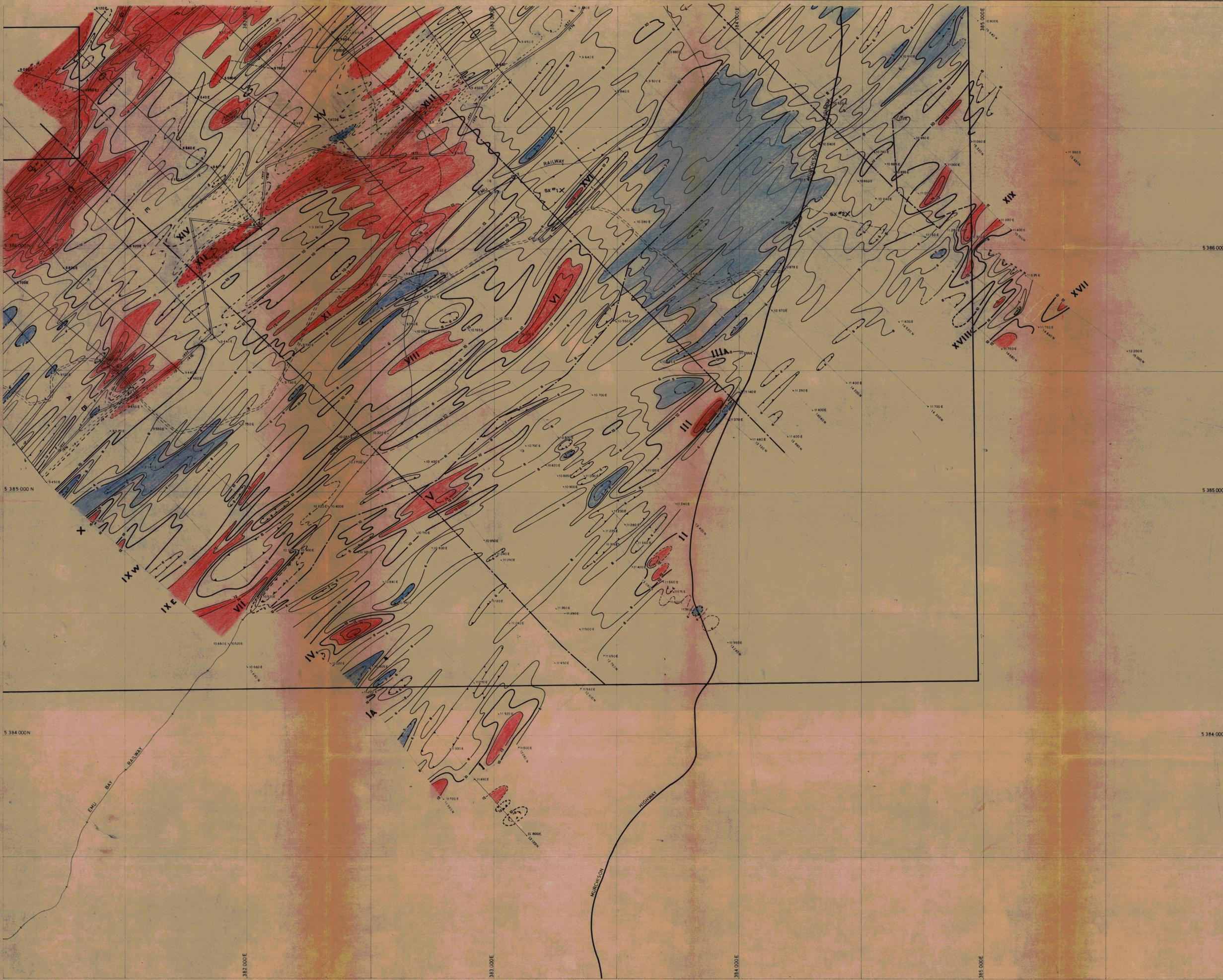
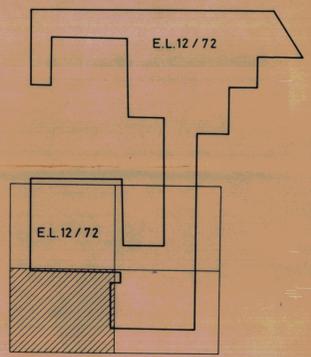
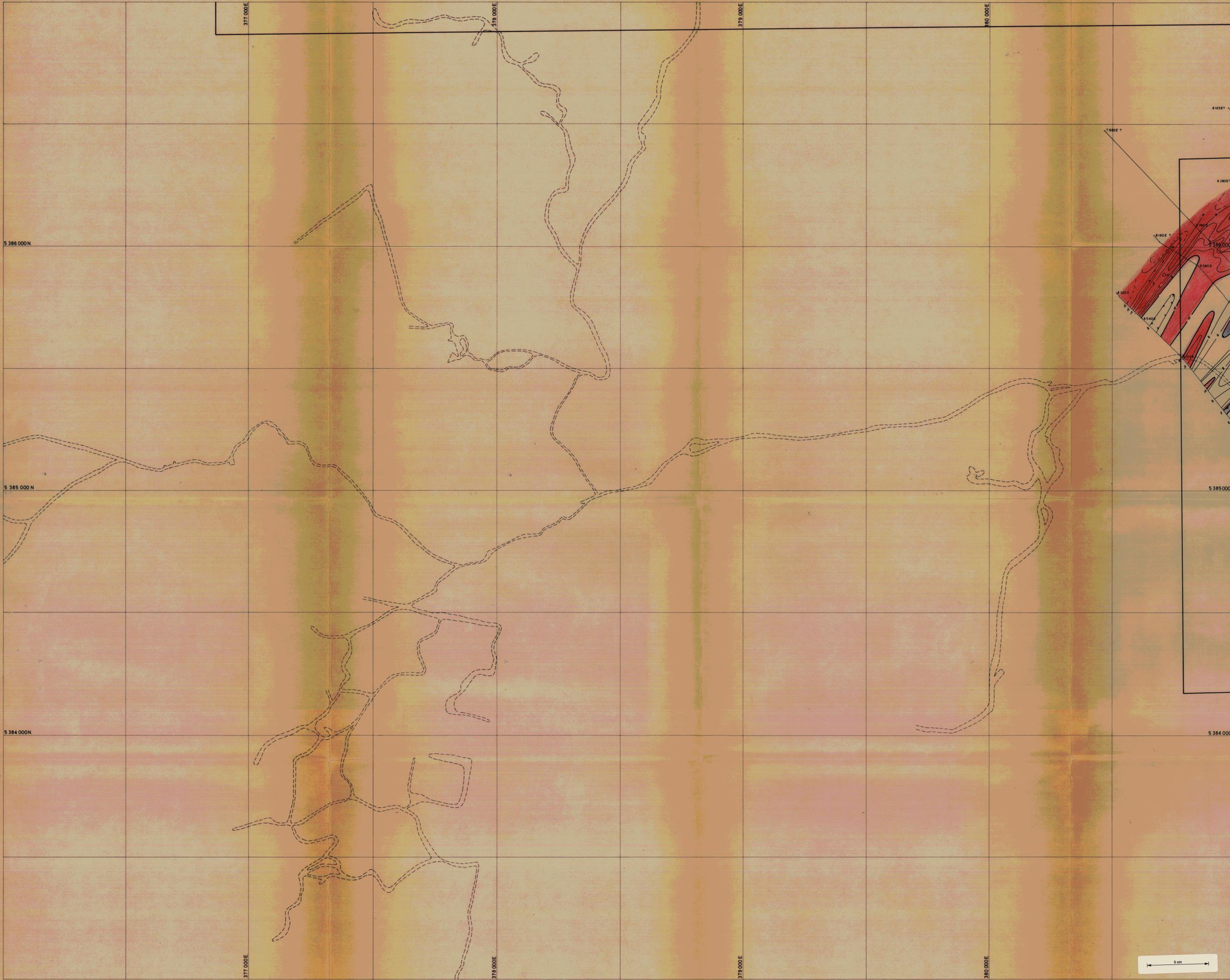


PLATE 7

216047

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.		
PROJECT:	BULGOBAC EL.12/72	TAS
CORRECTED BOCO GRID SHOWING		
CHARGEABILITY CONTOUR PLAN		
(IN MILLISECONDS)		
BOCO SOUTH SHEET	2188	Surveyed & Compiled by SCINTREX Pty Ltd APRIL-JUNE
SCALE:	1 : 5 000	REF. NO.
REFERENCE		
DATE:	8/9/76	DRAWN: R.A.H. GEOLOGY: N.H.H. AO 521-0015
REVISED:	OCT 1977	
JOB #:	TAS-051	SCINTREX SHT 2 of 3
SCINTREX PTY. LTD.	SHEET 2 of 2	PLATE 7

2189



PINNACLES SHEET PLATE 8
216048

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD
 PROJECT: BULGOBAC E.L.12/72 TAS
 CORRECTED BOCO GRID SHOWING
CHARGEABILITY CONTOUR PL
 (IN MILLISECONDS)
 BOCO SOUTH SHEET 2189
 SCALE: 1 : 5 000 REF. NO.
 DATE: 1/2/78 DRAWN: R.A.H. GEOLOGY: N.H.H. AO 521-0013



2190

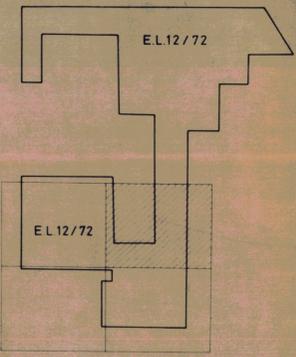
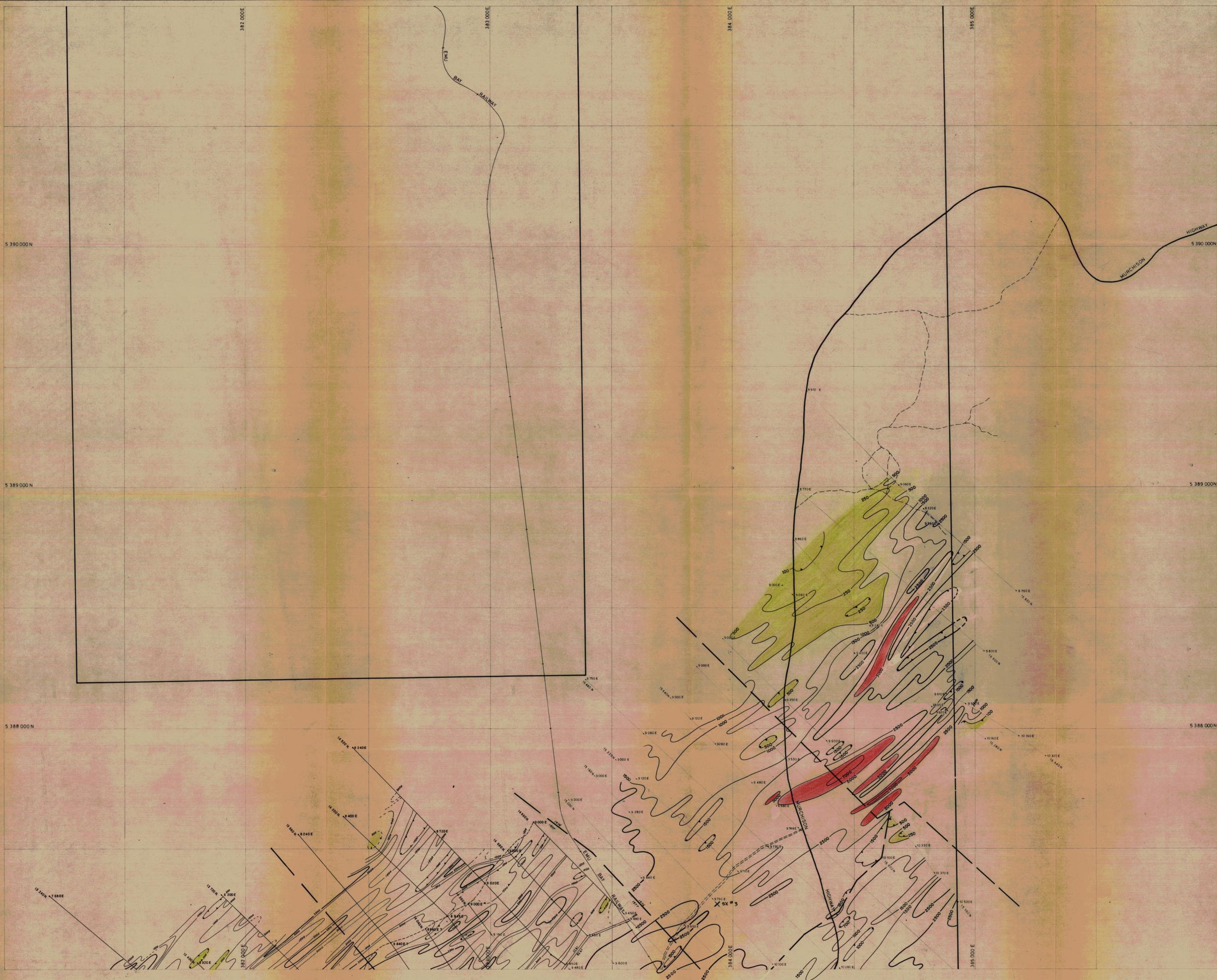


PLATE 9
216049

ELECTROLYTIC ZINC CO. OF A'ASIA LTD	
PROJECT BULGOBAC EL12/72	TAS
CORRECTED BOCO GRID SHOWING	
RESISTIVITY CONTOUR PLAN	
(IN OHM METRES)	
BOCO NORTH SHEET	2190
SCALE: 1:5000	Surveyed & Compiled by SCINTREX PTY. LTD. APRIL 1976
DATE 8/9/76	DRAWN R.A.H. GEOLOGY N.H.H. REF. NO. AO 521-0011
REVISED OCT 1977	SCINTREX SHT 1 of 3 PLATE
JOB # TAB-051	SHEET 1 OF 2 PLATE
SCINTREX PTY. LTD.	PLATE

2191

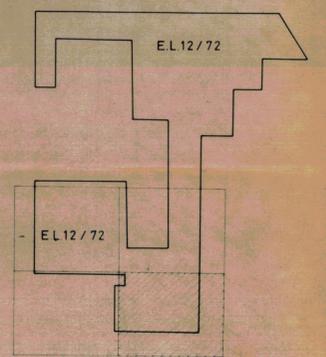
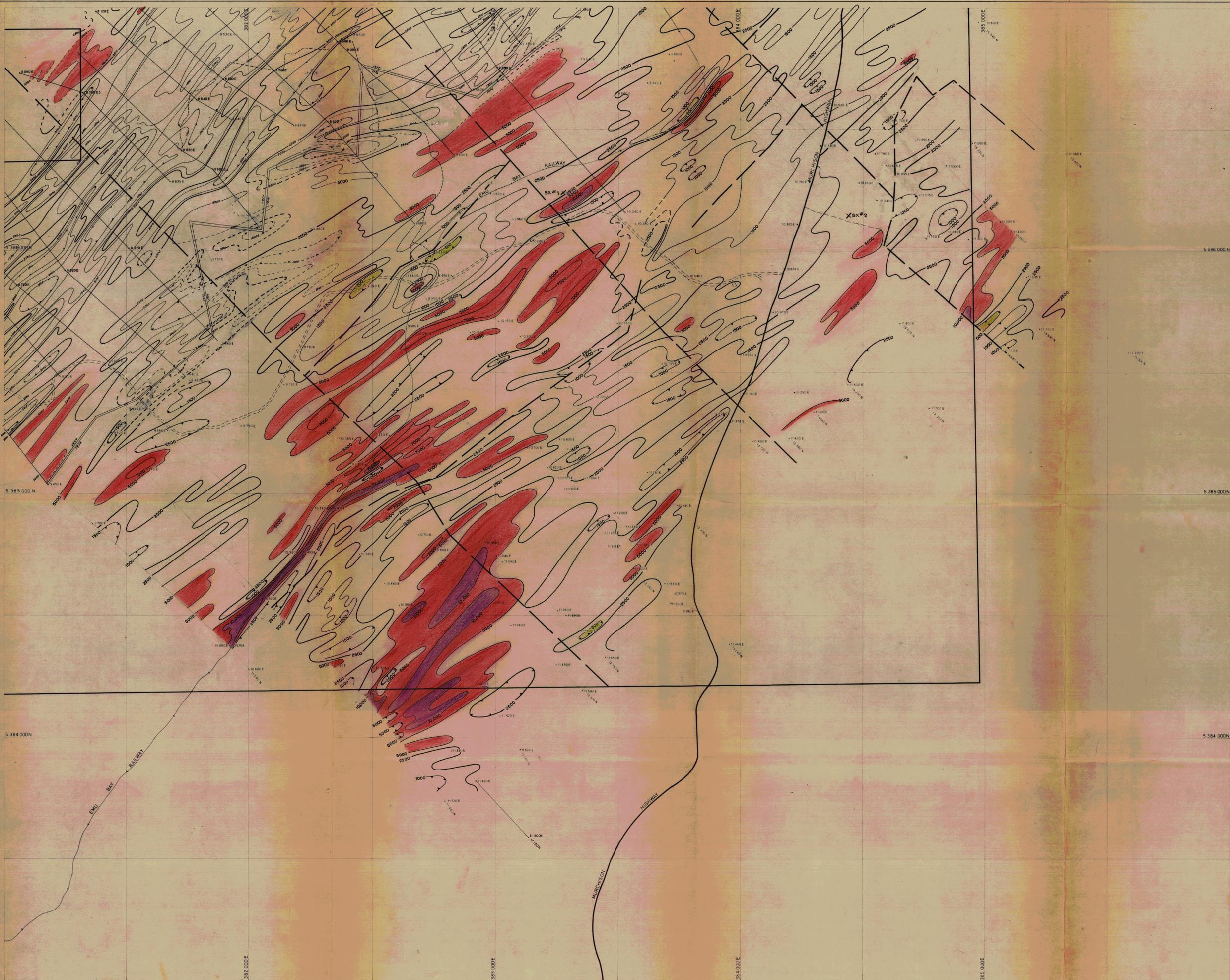
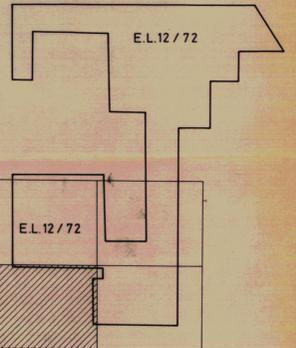
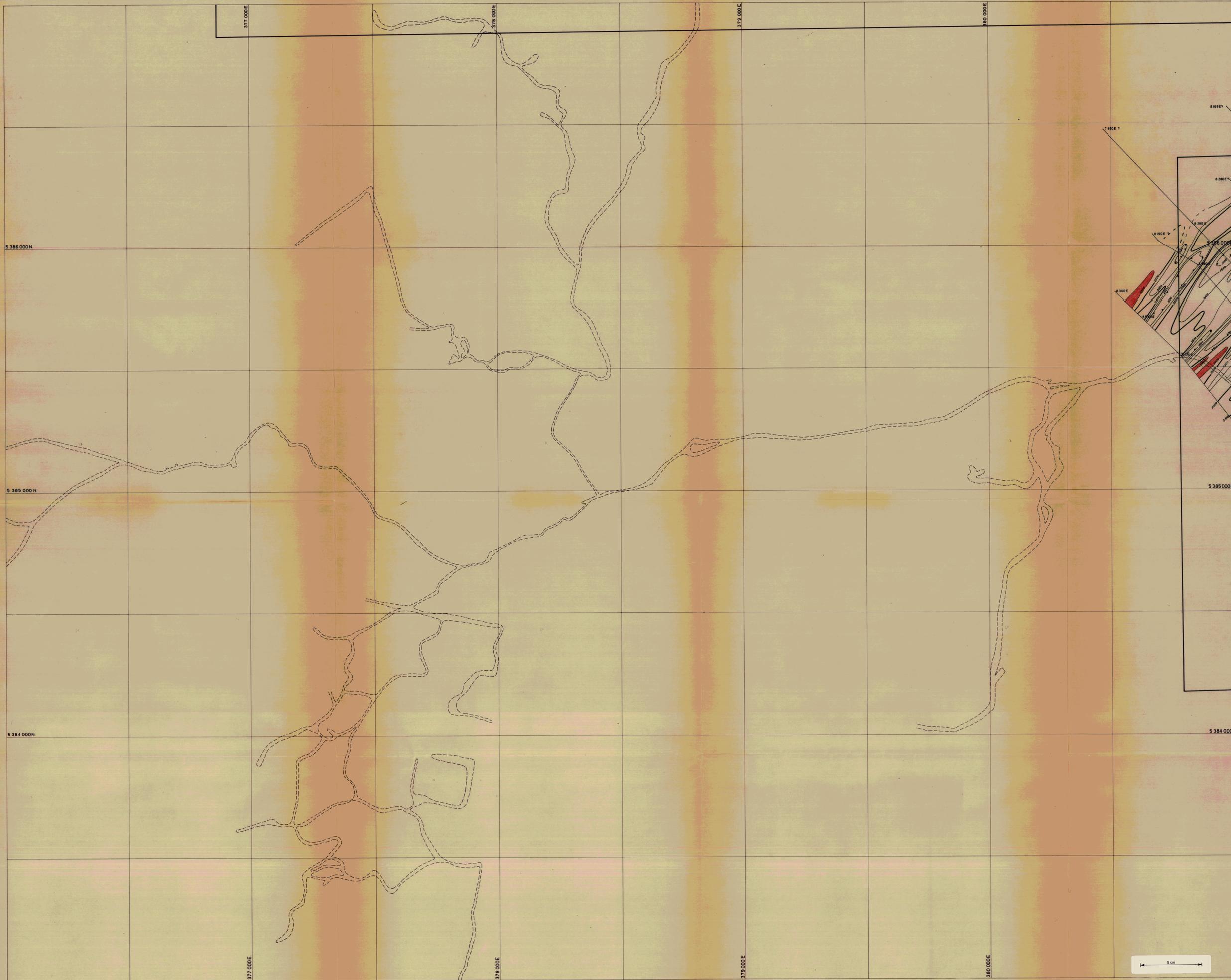


PLATE 10
 1:60,000
 5 cm

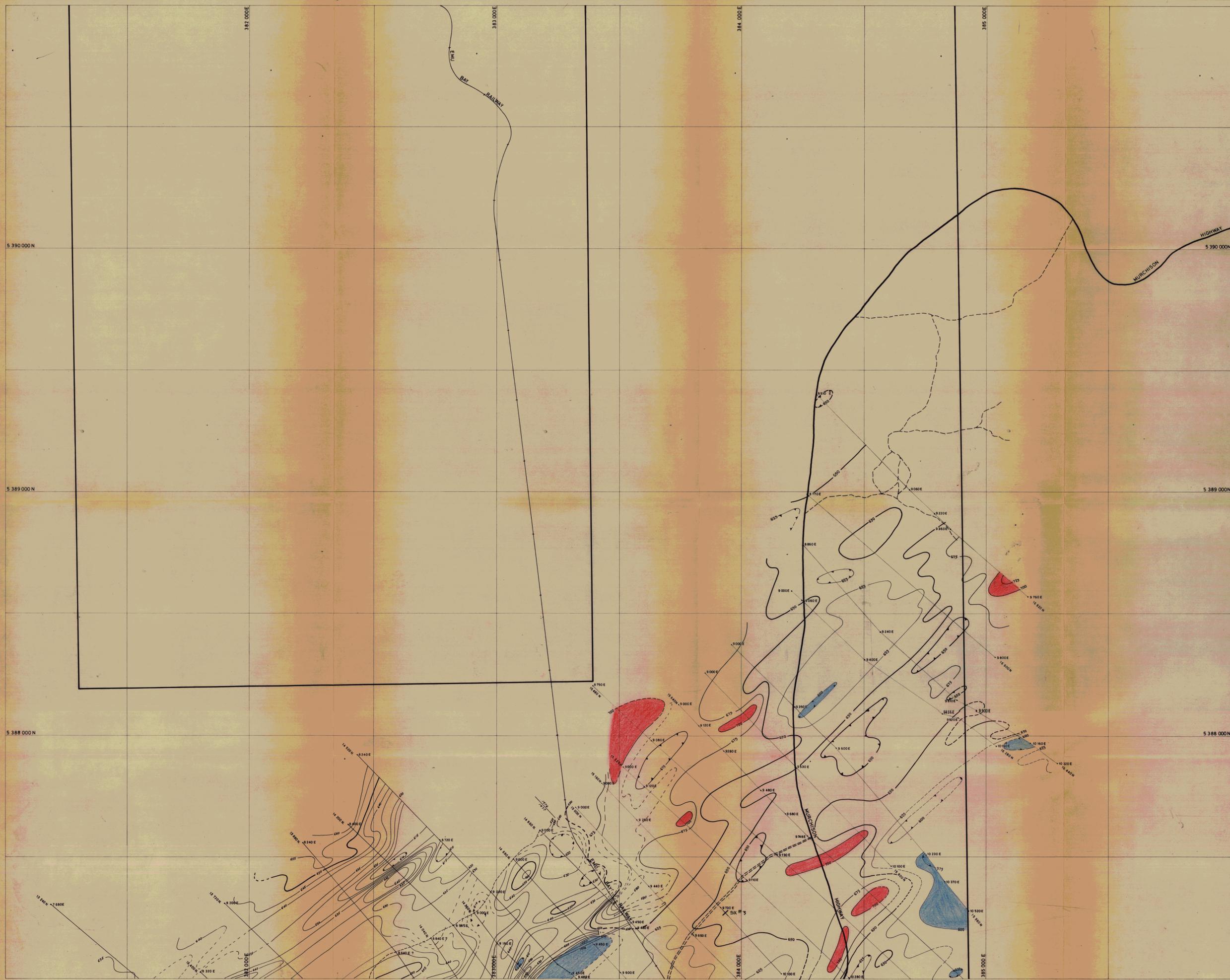
ELECTROLYTIC ZINC CO. OF ASIA LTD			
PROJECT	BULGOBAC EL12/72	TAS	
CORRECTED BOCO GRID SHOWING			
RESISTIVITY CONTOUR PLAN			
(IN OHM METRES)			
BOCO SOUTH SHEET	2191	Surveyed & Compiled by SCINTREX Pty Ltd. APRIL-JULY	
SCALE	1:5,000	REF NO	
REFERENCE		DATE	8/9/76
DRAWN	RAH	GEOLOGY	NHH
REVISED	OCT 1977	SCINTREX SHEET	2 of 3
JOB #	TAS-051	SHEET	2 of 2
SCINTREX PTY. LTD.		PLATE	



PINNACLES SHEET PLATE II
216051

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.
 PROJECT: BULGOBAC E.L.12/72 TAS.
 CORRECTED BOCO GRID SHOWING
RESISTIVITY CONTOUR PLAN
 (IN OHM METRES)
 78-1210
 SCALE: 1 : 5 000
 REFERENCE: 2192
 DATE: 1/2/78 DRAWN: R.A.H. GEOLOGY N.H.H. REF. NO. AO 521-0010

2193



Add 62,000 to all values.

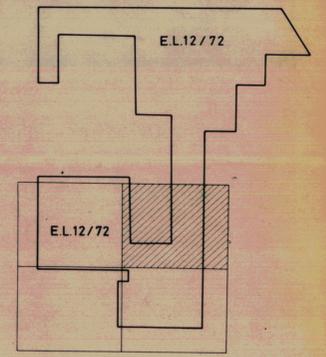
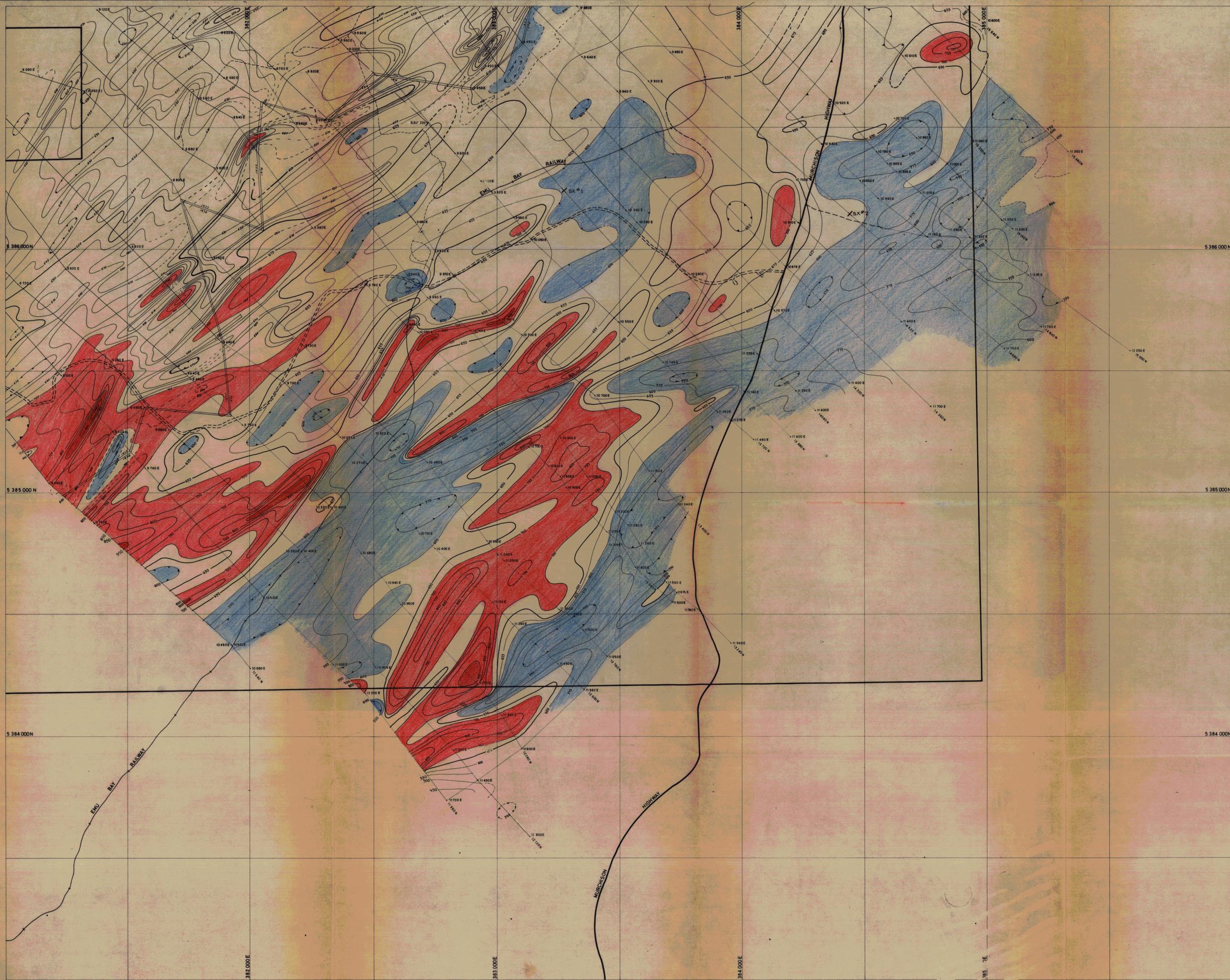


PLATE 12
216052

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD
 PROJECT: BULGOBAC E.L.12/72 TAS.
 CORRECTED BOCO GRID SHOWING
TOTAL MAGNETIC FIELD
CONTOUR PLAN
 (IN GAMMAS)
 BOCO NORTH SHEET 2193
 SCALE: 1:5 000
 DATE 8/9/76 DRAWN R.A.H. GEOLOGY N.H.H. REF. NO. AO 521-0009
 REVISED OCT 1977
 JOB # TAS-001 SCINTREX SHT 1 of 3 PLATE
 SCINTREX PTY. LTD. SHEET 1 of 2 PLATE

2194



Add 62,000 to all values.

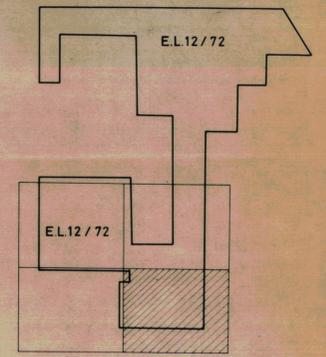
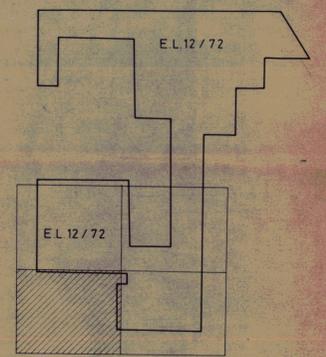
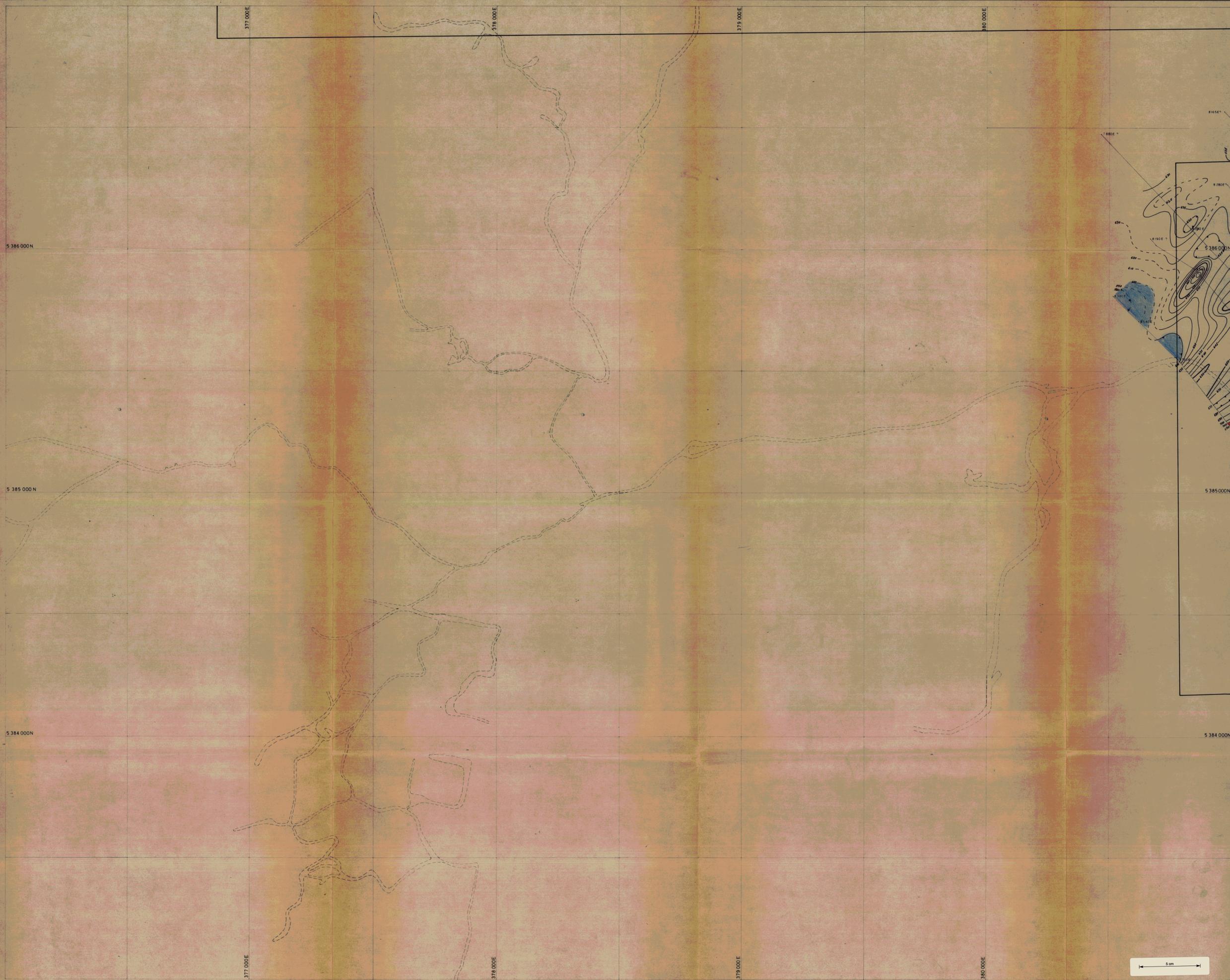


PLATE 13
216053

ELECTROLYTIC ZINC CO. OF ASIA, LTD.
 PROJECT: BULGOBAC EL12/72 TAS
 CORRECTED BOCO GRID SHOWING
TOTAL MAGNETIC FIELD
CONTOUR PLAN 2194
 (IN GAMMAS)
 BOCO SOUTH SHEET
 SCALE: 1 : 5 000
 REFERENCE: SCINTREX Pty. Ltd. SEP-76
 DATE: 8/9/76 DRAWN: R.A.H. GEOLOGY: N.H.H. REF. NO. AO 521-0008

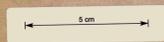
REVISED OCT 1977
 Job # TAS-081 SCINTREX SHT 2 of 3 PLATE
 SCINTREX PTY, LTD. SHEET 2 OF 2 PLATE

2195

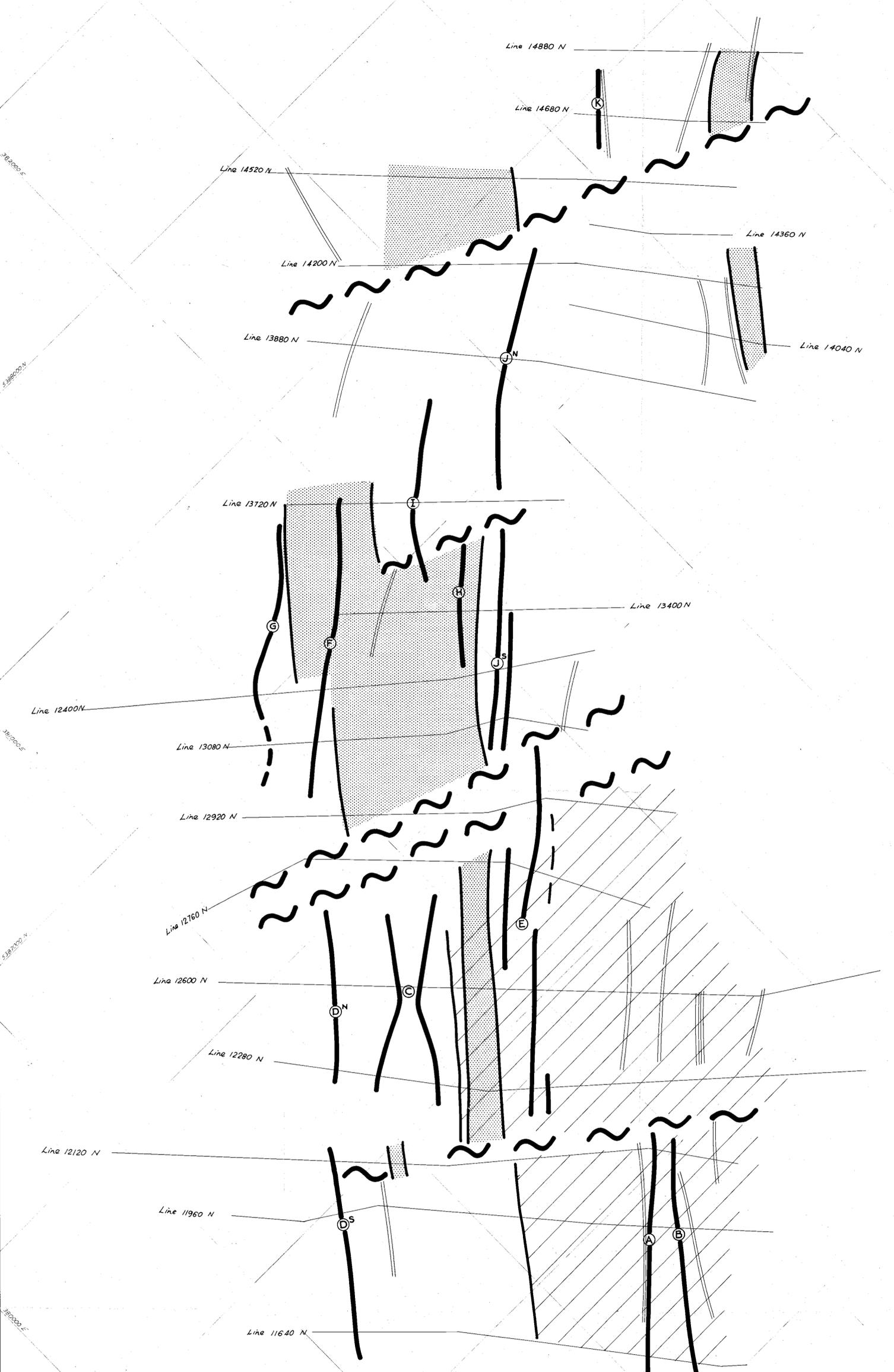


PINNACLES SHEET PLATE 14
216054

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.			
PROJECT: BULGOBAC E.L.12/72 TAS.			
CORRECTED BOCO GRID SHOWING			
78-1240	TOTAL MAGNETIC FIELD		Compiled by
	CONTOUR PLAN 2195		SCINTREX PTY. LTD. OCT. 1977
	(IN GAMMAS)		
BOCO NORTH SHEET			
SCALE	1 : 5 000	REFERENCE	REF. NO.
DATE: 1/2/78	DRAWN: R.A.H.	GEOLOGY: N.H.H.	AO 521-0007



2196



ELECTROLYTIC ZINC CO. OF A'ASIA LTD.

BOCO GRID
BULGOBAC E.L. 12/72 TASMANIA

GRADIENT ARRAY
ELECTRICAL INDUCED POLARIZATION
&
TOTAL MAGNETIC FIELD SURVEY

INTERPRETATION PLAN
216055

SURVEYED & COMPILED BY
SCINTREX

OCTOBER 1977

SCALE 1:5000
PLATE 15

Job. No. TAS -051

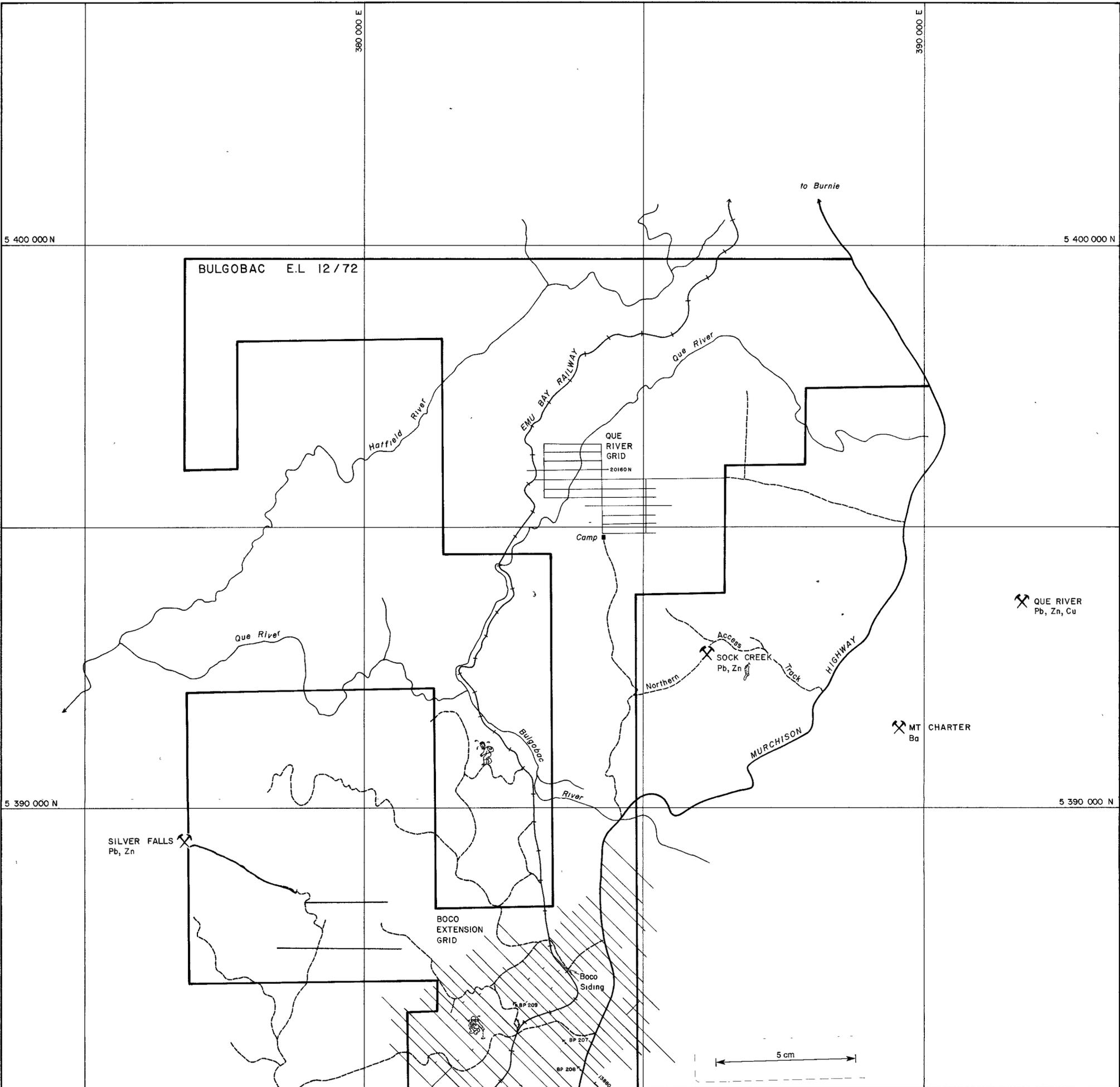
Sht 1 of 1

2196

PLATE 4



78-1310



LEGEND	
	Road
	Existing Vehicular Track
	Proposed Vehicular Track
	River
	Railway
	Existing Grid Line
	Proposed Grid Line
	Mine, Prospect

ELECTROLYTIC ZINC CO. OF A'ASIA LTD.		
PROJECT: BULGOBAC		TAS.
216056		78-1310
BULGOBAC E.L. 12/72		
PROPOSED EXPLORATION PROGRAMME		
1978-79 FIELD SEASON		
PLATE 16		2197
SCALE: 1:50,000	Survey: J.M.	Revised:
Reference: PLATE 1	Date: November 1978	REF. No.
Drawn R.P.T.	Checked:	A2-521-000

5 400 000 N

5 390 000 N

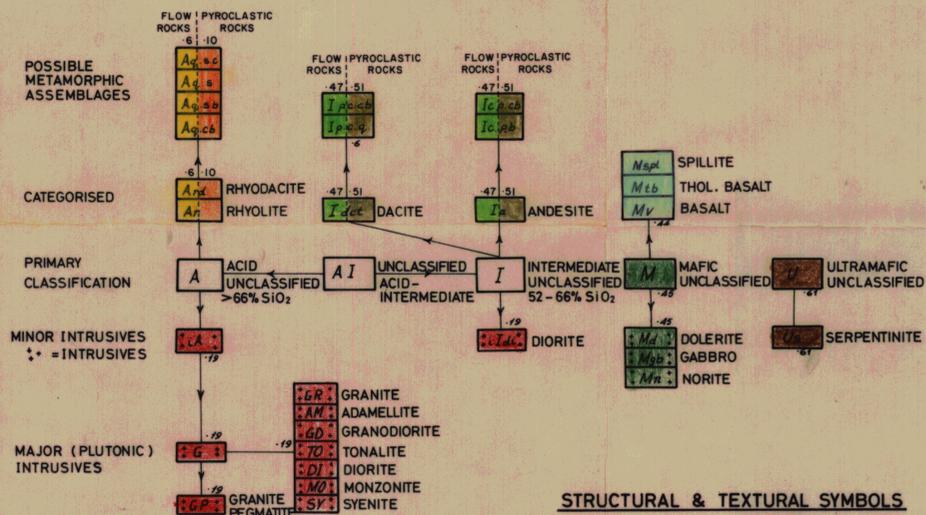
5 380 000 N

390 000 E

390 000 E

390 000 E

IGNEOUS ROCKS



SILICATE MINERALOGY

q	QUARTZ
k	K-FELSPAR
ab	ALBITE
p	PLAGIOCLASE
a	AMPHIBOLE
px	PYROXENE
b	BIOTITE
c	CHLORITE
cb	CARBONATE
s	SERICITE
e	EPIDOTE
t	TALC
ba	BARITE
f	FELSPAR
hb	HORNBLLENDE
sd	SIDERITE
ab	ALBITISED
cbcd	CARBONATED CHLORITISED
cd	CHLORITISED
sd	SERICITISED
si	SILICIFIED

TOPOGRAPHICAL SYMBOLS

—W—	WATER RACE
—/—/	FENCE
—	FORMED ROAD
—	TRACK
—+—+—	RAILWAY
—+—+—	RAILWAY (ABANDONED)
—	RIVER
—	STREAM
—	LAKE
—	SWAMP
—	BUILDING
—	TRIG. STATION
—	POWERLINE
—	HILL
—	SHAFTS
—	ADIT
—	TRENCH
—	MINE OR QUARRY
—	DRILL HOLE - BARREN
—	DRILL HOLE - COLOUR FOR MINERALISATION
—	(i) DRILL HOLE - SIGNIFICANT OR POSSIBLE ORE GRADE AND WIDTH
—	(ii) DRILL HOLE - MINOR OR POSSIBLE SUB-ORE GRADE MINERALISATION
—	DRILL HOLE - FAILED TO REACH TARGET

STRUCTURAL & TEXTURAL SYMBOLS

t	UNDIFFERENTIATED TUFF
lt	LITHIC TUFF
xt	CRYSTAL TUFF
vt	VITRIC TUFF
lpt	LAPILLI TUFF 4-32mm.
b	BRECCIA >32mm.
ag	AGGLOMERATE >32mm.
bm	BOMBS
fm	FIAMME (LENGTH IN cms.)
pm	PUMICE
af	ASH FLOW
qey	QUARTZ EYES/AUGEN TEXTURE
pl	PILLOWS
fb	FLOW BANDING
fb	FLOW BRECCIA
l	LAVA
a	AMYGDALOIDAL
s	SPHERULITIC
p	PORPHYRITIC
cl	CLOTS
ac	ACICULAR
op	OPHITIC
cm	CHILLED MARGIN
pm	PEGMATIC VEINS
cl	CLEAVED
sch	SCHIST
ox	OXIDISED
lat	LATERITE
bd	BEDDED
cb	CROSS BEDDED
thbd	THICK BEDDED
thbd	THIN BEDDED
lam	LAMINATED
gd	GRADED OR DIRECTION OF DECREASING GRAIN SIZE
lc	LODE CAST
sf	SCOUR & FILL
ves	VESICULAR
jt	JOINTED
stn	STAINING

SULPHIDE & OXIDE MINERALOGY

bx	BOXWORK
su	SULPHIDES
gs	GOSSAN
pn	PENTLANDITE
hm	HEMATITE
cc	CHALCOCITE
cu	COVELLITE
bn	BORNITE
cp	CHALCOPYRITE
sp	SPHALERITE
ga	GALENA
py	PYRRHOTITE
py	PYRITE
il	ILLMENITE
lc	LEUCOXENE
mag	MAGNETITE

MINERALISATION

DIS5	10% DISSEMINATED
DIS10	10-20% "
DIS25	25% "
S7R	STRINGER
MMS	MASSIVE

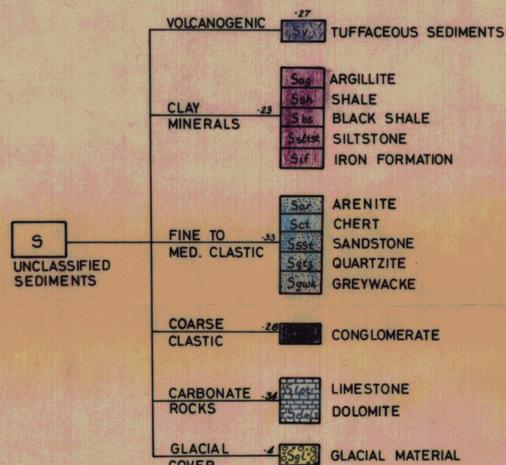
COLOURS

pl	PALE
dk	DARK
pk	PINK
rd	RED
org	ORANGE
yel	YELLOW
ol	OLIVE
grn	GREEN
bl	BLUE
gr	GREY
blk	BLACK
brn	BROWN
wh	WHITE
crm	CREAM
purp	PURPLE

IGNEOUS GRAIN SIZE

vcg	VERY COARSE GRAINED >5 cm
cg	COARSE GRAINED 5cm-5mm
mg	MEDIUM GRAINED 5mm-1mm
fg	FINE GRAINED <1mm

SEDIMENTARY ROCKS



STRUCTURAL SYMBOLS

—	FAULT
—	DEFINITE CONTACT OR OUTCROP LIMIT
—	APPROXIMATE CONTACT OR RUBBLE BOUNDARY
—	INTERPRETED CONTACT OR FLOAT BOUNDARY
—	SCHISTOSE ZONE
—	UNCONFORMITY
—	BEDDING
—	OVERTURNED BEDDING
—	CLEAVAGE
—	PRIMARY FOLIATION
—	JOINTING
—	PLUNGE
—	FOLD AXIS PLUNGE
—	FACING

OPERATION OF LEGEND

DESCRIBING ROCK UNITS

- CAPITAL LETTER - INDICATES PRIMARY CLASSIFICATION OF A - ACID IGNEOUS ROCKS
 - LOWER CASE LETTERS - INDICATES THE FOLLOWING:
 - AS PREFIXES IN PROGRESSIVE ORDER
 - COLOURS eg (i) grn.M - GREEN MAFIC IGNEOUS ROCK
(ii) pk/grn.A - PINK FRAGMENTS OR PHENOCRYSTS IN AN ACID IGNEOUS ROCK WITH A GREEN MATRIX
 - STRUCTURAL OR TEXTURAL FEATURES
eg x.c.t.A - CRYSTAL TUFF OF ACID COMPOSITION
(ii) x.b.d.S - CROSS BEDDED SEDIMENTARY ROCK
 - AS SUFFIXES IN PROGRESSIVE ORDER
 - CATEGORISED: eg (i) Ar - RHYOLITE, (ii) Sch - SHALE
 - MINERALOGY: eg (i) p.Arf - RHYOLITE WITH FELSPAR PHENOCRYSTS
(ii) Aqa - QUARTZ SERICITE ROCK OF ACID IGNEOUS ORIGIN
(iii) Ar.ab - ALBITISED RHYOLITE
- EXAMPLE - pk/grn.cld.x.v.t.Ar.ab.cd
pk/grn(COLOURS) - PINK CRYSTALS IN A GREEN MATRIX, cld(STRUCTURAL FEATURE) - CLEAVED, x.v.t.(TEXTURE) - CRYSTAL VITRIC TUFF, A(PRIMARY SUBDIVISION) - ACID IGNEOUS ROCK, rd.(CATEGORISED) - RHYODACITE, ab.(PRIMARY MINERALOGY) - ALBITE PHENOCRYSTS, cd.(ALTERATION MINERALOGY) - CHLORITISED.

10 - COLOUR OF CUMBERLAND 'DERWENT' N° 19 PENCIL

ELECTROLYTIC ZINC CO. OF ASIA. LTD.	
PROJECT: MT. BLACK	TAS.
GEOLOGICAL LEGEND	
FOR EXPLORATION MAPPING	
216057	
REF. NO.	PLATE 17
DATE: 10/75	REVISED: 12/78