UMEX UNION MINIÈRE EXPLORATIONS
AND MINING CORPORATION LIMITED

Suite 200, 4299 Canada Way, Burnaby, B.C. V5G 1H4
Telephone (604) 437-9491

ASSESSMENT REPORT

GEOCHEMICAL SOIL AND ELECTROMAGNETIC SURVEYS

REIN 7-50 MINERAL CLAIMS

Record Numbers YA5731-YA5774

Mayo Mining District, Yukon

N.T.S. 116B/9

Latitude 64°43'N
Longitude 138°11'W

by

A.A. Burgoyne, P.Eng.

Work Done: July 15 to August 23, 1977

Date: December 19, 1977

Owner: Union Miniere Explorations and
Mining Corporation Limited

090264

This ... by the
G...
m... of
ed ...

$4,700.00

D.B. Craig

Considered ... Mining Act
Section 5...

B. R. BAXTER
Supervising Mining Recorder

CONTENTS

<u>Appendices</u>

<u>Figures</u>

GEOCHEMICAL SOIL AND ELECTROMAGNETIC SURVEYS

ON THE REIN 7-50 MINERAL CLAIMS

INTRODUCTION

During the period of July 15 to August 23, 1977, geochemical and electromagnetic surveys were completed on the Rein claims in the Mayo Mining District, Yukon. The claims are located approximately six miles south of Lomond Lake and four and one-half miles east of the Dempster Highway at latitude $64^{o}43'$N and longitude $138^{o}11'$W. The claims are accessible by helicopter, although the most western Rein claims can be reached by a three hour walk, eastward from the Dempster Highway. Figure 1 is a location map of the claims. The geochemical survey was completed by Messrs. Holm, Reid, and Pettet; the electromagnetic surveys were completed by Messrs. Holm, Gerrard, and Reid. The surveys were under the supervision of Mr. C. Dyson, P.Eng. and Mr. A. Burgoyne, P.Eng.

PROPERTY AND ASSESSMENT APPLICATION

Currently the following claims are in good standing:

Claim Name	Grant Numbers	Expiry Date
Rein 7-50	YA5731-YA5774	July 14, 1978

This report is to cover assessment requirements for the Rein 7-50 claims. Since geochemcial and electromagnetic surveys have been completed on the western and eastern parts of the claims, several claim groups have been established in order to apply assessment expenditures over all desired claims. Anniversary dates have been extended to 1979 for Rein 1-8, 11-26, 28-50 claims and to 1980 for Rein 9, 10, and 27 claims. Cost of surveys are given in Appendix I whereas application of assessment is given in Appendix II.

Geochemical soil survey results for lead have previously been applied to the Rein mineral claims; however, subsequent detailed follow-up lead soil surveys have been completed largely on the eastern parts of the claims. The previous lead soil survey results are incorporated into this report for completeness of data and for interpretation. Previously submitted geochemical data included:

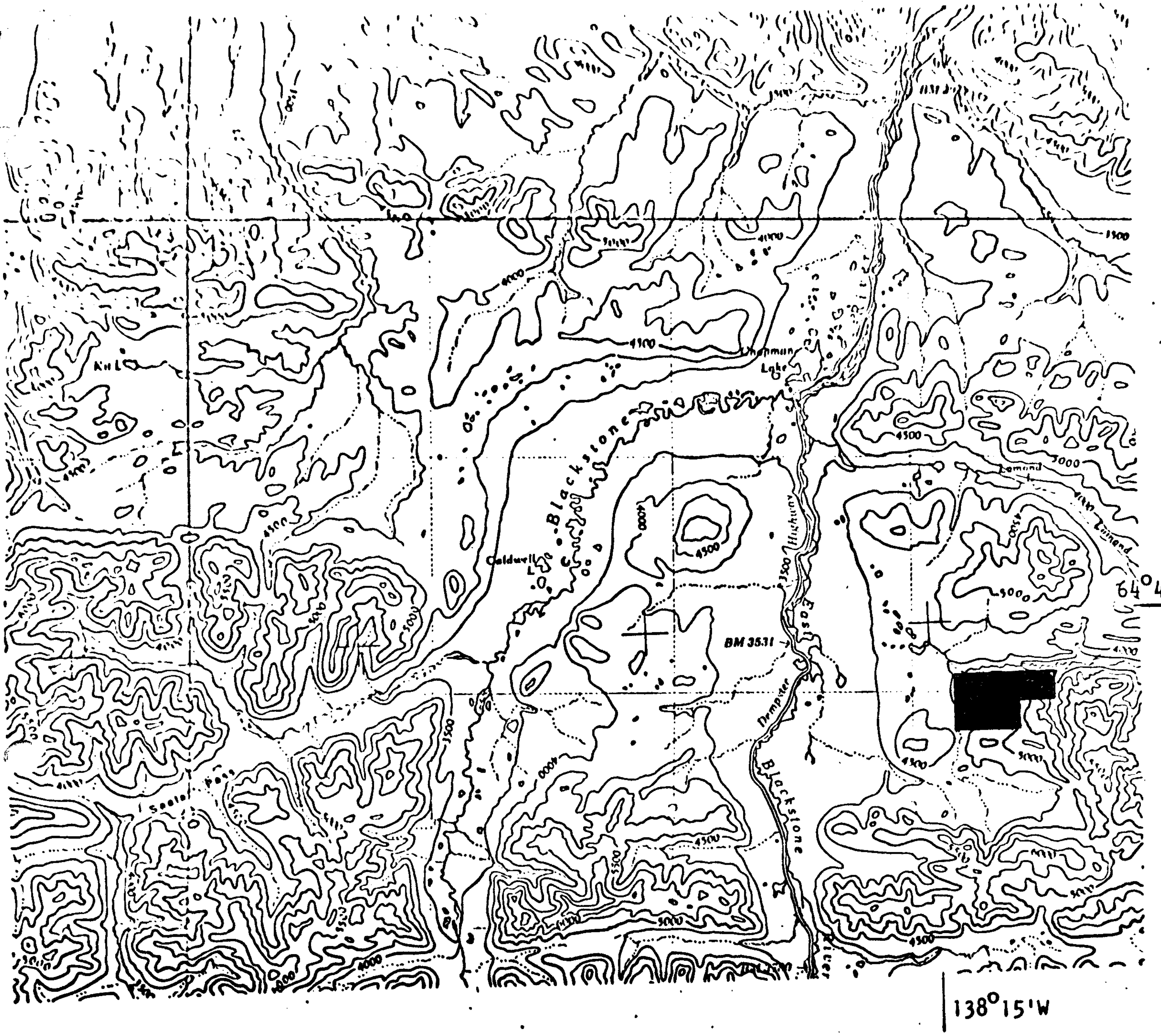

FIGURE 1

LOCATION MAP

REIN 7-50 CLAIMS

1/250,000

Q.J. Burgoyne

i) Lines 0, 15E, 30E, 45E, 60E; Lines 45W, 60W, 75W, 90W, 138W and 105W that was done in 1976 for Rein claims 7-50

ii) Lines 138W, 151W, 155W, 159W completed in 1977 for Rein claims 36, 38-40, 49-50, and 51-60

GEOLOGY

The claims are underlain by a thick, highly thrusted, in part folded sequence of buff to olive grey weathering calcareous to non-calcareous shales and black siliceous argillites with minor limestone and chert that range in age from Ordovician to Carboniferous. The Geological Survey of Canada Map 1284A indicates the southern fringes of the claims are underlain by Middle Palaeozoic Unit 9 Road River Formation and the remainder of the claims Upper Palaeozoic Unit 13. The regional trend is east-west with variable dips to the south. Although Map 1284A indicates a single thrust fault dipping to the south on the southern edges of the claims, the whole width of the claim block is in fact a zone of thrusting. Reconnaissance mapping has indicated at least three well defined major east-west thrust fault zones over a north-south distance of 8000 feet that traverse the property in its entirety. These thrusts have brought older strata from the south on and over younger strata, consequently a significant repeat of strata occurs.

GEOCHEMICAL SOIL SURVEY

Methods, Grid Control and Analytical Treatment

A total of 255 soil samples were collected over lines 5W, 10W, 19W, 23W, 32W, 37W, 47W, 52W, 127W and base line over 9.9 line-miles and subsequently analysed for total lead. At each sample site a hole was excavated with a shovel or mattock and 0.5 to 1.5 lbs. of mostly B horizon soil was collected and placed in a Kraft soil sample bag. Note Figure 2.

An east-west base line established in 1976 was re-chained and re-flagged and claim posts and existing lines were "tied-in" to the grid. North-south cross lines were spaced at 400 and 500 foot spacings (between 1976 lines which were at 1500 foot spacings) on the eastern part of the Rein claims. Sample site stations were marked by coloured flagging at 200 foot intervals along cross lines and the base line although flagging was placed at roughly 100 foot intervals to define the lines. A topofoil chain and compass were used to control distances and direction.

The samples were freighted to Dawson City, Yukon, and analysed at a mobile laboratory of Acme Analytical Laboratories Ltd. The samples were dried in their respective sample bags at a temperature of 60°C, then sieved to -80 mesh through a nylon or stainless steel screen, digested for 1-1½ hours in aqua regia, bulked with deionized water, and analysed by atomic absorption.

Results (Figure 2)

Statistical analysis consisting of cumulative frequency versus lead concentration have been previously completed.[1] Two distinct populations are present, a background population from 3-20 ppm Pb, and an anomalous population of ≥30 ppm Pb. An overlap of the populations occurs between 20-30 ppm. Contouring of the lead results at the 30 ppm contour defines two distinct large anomalous areas and several small one-to-three sample anomalous areas.

Anomaly I. This anomaly is located on the northwestern corner of the Rein claims. The anomaly is of irregular shape and may in fact be two separate anomalies. The dimensions of the anomaly are from 100-1500 feet in width and 3000 feet in length. The cause of this anomaly is occurrence of sulphide-bearing veins and fault veins containing minor sphalerite, galena, pyrite, rare chalcopyrite in a quartz-carbonate-barite gangue. On line 127W, 15N a vein varying from 0-6 inches thick, traceable over 100 feet along a N30°W trend and dipping vertical is found - abundant talus float is found downslope from the vein. Again at a coordinate of L127W, 22N (at the 1560 ppm value) a fault zone trend N33°E and dipping vertical contains weak galena sphalerite mineralization. The observed geochemical lead values directly on or adjacent to the known observed vein are extremely anomalous. Lesser anomalous lead values occurring on the more western parts of Anomaly I are probably caused by similar type mineralization.

Anomaly II. This anomaly is located also on the northwestern part of the Rein claims, 1000 feet or more to the south and west of Anomaly I. The dimensions of the anomaly are approximately 1200 feet square. No base metal mineralization has been observed. The pattern of the anomaly would suggest a source on the northeast part of the anomaly which is located over a small topographic high with subsequent physical dispersion largely occurring downhill and to the west.

Several spot or small anomalous areas occur peripheral to Anomalies I and II and on the eastern parts of the claims. These anomalies

---

[1] Dyson, C.V., Assessment Report, Geochemical Soil Survey on the Rein 7-50 Mineral Claims, April, 1977

are not considered to be of any potential economic significance because of their low magnitude and small areal size. No base metal mineralization has been found associated with these anomalies.

ELECTROMAGNETIC SURVEYS

Methods and Techniques

Crone, CEM, and EM-16 surveys were conducted over parts of the Rein claims. Line coverage for both surveys is indicated on Figure 3 and results for EM-16 and CEM are illustrated in Figures 4 and 5 , respectively. Both surveys were concentrated on the western and eastern parts of the claims.

A horizontal loop shootback electromagnetic survey utilizing a Crone CEM unit was conducted over parts of the Rein claims. With this method two operators traverse along the cross line. Both operators in turn transmit and receive - measuring the dip angle of the field. The two dip angles are then added together and equal "0" if no conductors are present. The coil separation in this survey was 200 feet and readings were taken at two frequencies, a low 210 Hz and a medium 1880 Hz.

The EM-16 survey was completed with a Ronka unit. The measurement range for the in-phase is $\pm$ 150% and for the out-of-phase $\pm$ 40% with an accuracy of 1%. The EM-16 is a sensitive audio-receiver that uses the signal transmitted by several American military stations in the 15-25 kHz range. For this survey the station "NPG" in Seattle, Washington at 18.6 kHz was utilized. This station is approximately E60^{o}S from the Rein claims. The primary magnetic field generated by the station is considered uniform over the surveyed area. When the primary magnetic fields meet conductive bodies in the ground, there will be secondary magnetic fields emitted. The Ronka EM-16 effectively measures the vertical components of these secondary fields. To take a reading the horizontal coil in the instrument is oriented along the magnetic field lines and the vertical coil is tilted to minimize the sound signal and the tilt angle recorded in percentage or degrees. This angle is a measure of the vertical real component (in-phase) of the induced secondary field. A second angle measurement of the minimum signal from the horizontal coil is then taken; this measurement is the quadrature or out-of-phase component. EM-16 in-phase and out-of-phase readings were taken every 50 feet along the cross lines. In Figure the in-phase data for the EM-16 survey results has been reproduced in contour form at a scale of 1"=400'. This has been done in an effort to reduce the geological noise component (which is generated in the 15-27 kHz frequency range) and to transform zero crossovers and inflections into peaks. The technique and resulting interpretation as used is described by Fraser (1969).[2] Basically if four consecutive data points, P_1, P_2, P_3, P_4, are considered then the function to be plotted is simply: $F = (P_4 + P_3) - (P_2 + P_1)$ and the plotting point falls between stations P_2 and P_3. Only positive values are contoured.

Results

The Crone CEM survey is illustrated on Figure 4 as line profile and shows persistent negative values on both frequencies over great lengths of all the profiles (lines) and indicates a low resistivity for the environment. This is consistent with the known geology which indicates shales, graphitic shales and numerous thrusts and faults. Only one good conductor stands out at line 155W, 21S. Both frequencies give a nearly identical response, indicating excellent conductivity. The conductor width is estimated to be in the order of 100 feet at a depth of 20 to 40 feet below surface. A weak indication on line 151W, 21S may indicate an east-west strike for the conductor, a direction that is consistent with the regional geological trend. Dip determination of the conductor is difficult from the conductor but a dip to the south or southeast is possible. No outcrop is present near the conductor and geochemical surveys show only background values for zinc and one slightly higher value for lead. A wide graphitic horizon in the shales or a massive sulphide layer could cause such a conductor; because of the lack of any positive geochemical response, the presence of a graphitic shale horizon is favoured.

The EM-16 survey results are illustrated on Figure 5 as Fraser-filtered, in-phase dip angles. The Crone CEM survey as well as the general geology indicates a low resistivity environment. Consequently only a very limited penetration can be expected from the EM-16 method. The unfavourable direction of the transmitter station with respect to direction of survey lines and regional strike diminishes the quanitative validity of the survey. Numerous conductors are indicated; they can be caused by structural features such as faults, graphitic horizons in the shales and by conductive overburden. The EM-16 does not give a

---

[2] Fraser, D.C., 1969, Contouring of VLF-EM Data: Geophysics, Vol. 34, No. 6, December, 1969, p. 958-967.

response over line 155W, 21S where the CEM indicates a conductor at depth; the EM-16 has thus a shallow depth penetration and many of the "so-called" contoured conductors are probably caused by near surface features such as overburden and weathered bedrock.

CONCLUSIONS AND RECOMMENDATIONS

(1) A geochemical lead soil survey completed on the Rein claims has defined two large anomalies and several low order, small areal anomalies.

(2) Vein mineralization in situ and float containing minor amounts of galena, sphalerite, pyrite and rare chalcopyrite in a quartz-carbonate-barite gangue has been found in the vicinity of the strongest anomaly.

(3) The geochemical anomalies are thus considered to be caused by minor base metal vein mineralization of no economic significance.

(4) The Crone CEM and electromagnetic survey has defined that the underlying rocks are of low resistivity; one good conductor has been outlined and thought to be caused by graphitic shale.

(5) The EM-16 survey results indicate several conductors that are thought to be caused by faults, graphitic shale horizons and conductive overburden; the EM-16 has a shallow depth penetration and most conductors are probably caused by near surface effects such as overburden and weathered bedrock.

(6) The geochemical lead soil and electromagnetic surveys have not outlined nor defined any potential areas for consideration of economic base metal mineralization.

Respectfully submitted,

A.A. Burgoyne

A.A. Burgoyne, P.Eng.

Figure No. 3.

BLACKSTONE PROJECT 1977

REIN CLAIMS

LOCATION MAP

ELECTROMAGNETIC SURVEYS

N.T.S. 116B (Dawson)

Scale: 0 1000 2000 feet 1:12000

UMEX CORPORATION LTD.

DRAWN BY: A. PAUWELS, H. HOLM
DATE:
SURVEYED BY: H.H., J.R., E.G.

DWG. No.

A.A. Burgoyne

To accompany an assessment report on geochemical soil and electromagnetic surveys on the Rein 7-50 mineral claims, dated December 19, 1977 by A.A. Burgoyne, P.Eng.

LEGEND

- stream
- claim post
- soil sample location with lead in ppm.
- lead greater than 30 ppm.

Figure No. 2

BLACKSTONE PROJECT 1977

REIN CLAIMS

LEAD SOIL GEOCHEMISTRY

N.T.S. 116B (Dawson)

Scale : 0 — 1000 — 2000 feet 1:12000

UMEX CORPORATION LTD.

DRAWN BY : H. Holm
DATE :
SURVEYED BY : J.R., L.P., H.H.

DWG. No.

To accompany an assessment report on geochemical soil and electromagnetic surveys on the Rein 7-50 mineral claims, dated December 19, 1977 by A.A. Burgoyne, P.Eng.

A.A. Burgoyne

Figure No. 4

BLACKSTONE PROJECT 1977

REIN CLAIMS

HORIZONTAL LOOP EM

CRONE CEM

in-line schootback a=200'

Scale: 0 400' 800' 1:4800

UMEX CORPORATION LTD.

DRAWN BY: A.P.
DATE:
SURVEYED BY: H.H

DWG. No.

A.A. Burgoyne

To accompany an assessment report on geochemical soil and electromagnetic surveys on the Rein 7-50 mineral claims, dated December 19, 1977 by A.A. Burgoyne, P.Eng.

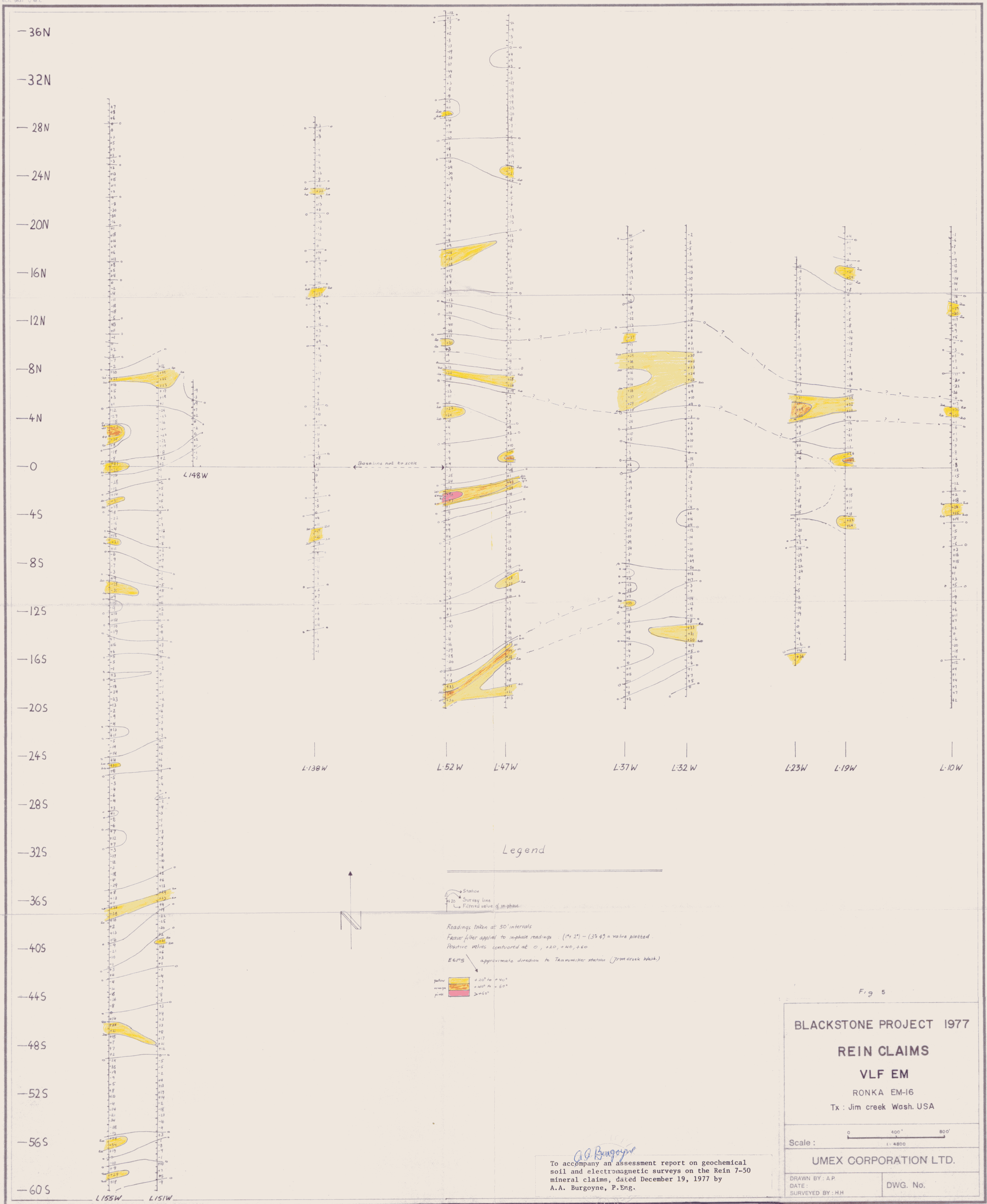

Fig 5

BLACKSTONE PROJECT 1977

REIN CLAIMS

VLF EM

RONKA EM-16

Tx : Jim creek Wash. USA

Scale : 0 400' 800' 1 : 4800

UMEX CORPORATION LTD.

DRAWN BY : A.P.
DATE :
SURVEYED BY : H.H

DWG. No.

A.A. Burgoyne

To accompany an assessment report on geochemical soil and electromagnetic surveys on the Rein 7-50 mineral claims, dated December 19, 1977 by A.A. Burgoyne, P.Eng.