82-398-10449.

REPORT ON

VLF-EM AND TOTAL FIELD GROUND MAGNETIC SURVEYS

PARROTT LAKES PROSPECT IRK CLAIMS

OMINECA MINING DISTRICT

BRITISH COLUMBIA, CANADA

93L /2E

54° 11.5' 120° 38'

ASARCO EXPLORATION OF CANADA LTD

BY

ASARCO Incorporated

Geophysical Office - Exploration Department

Salt Lake City, Utah

June 3, 1982

CONTENTS

INTRODUCTION

Between May 4 and May 14 inclusive, 1982, VLF-EM and total field ground magnetic surveys were conducted over portions of IRK I, IRK VI, IRK VII and IRK IX claims. These claims are part of the Parrott Lakes prospect located approximately 26.8 km south of Houston, B.C. (Figures 1 and 2). The work was carried out by Asarco Incorporated personnel for Asarco Exploration Company of Canada, Ltd.

The outcrop within the survey area is limited to the eastern portion of the IRK I claim. These exposures indicate the area to be underlain by nearly flat lying volcanics of the Tip Top Hill and Buck Creek formations. The rest of the survey area is covered by a mantle of glacial till (Figure 3).

SUMMARY AND RECOMMENDATIONS

The VLF survey located numerous conductors, the majority of which are thought to be due to changes in the conductivity of the overburden and weakly mineralized shears.

Four conductors were located that exhibit an increased potential for economic mineralization. These are rated from A to D in descending order of their potential. The rating was determined by their association with a localized magnetic anomaly and their conductivities (Plate 1). This rating is based on the magnetic and VLF results alone and any additional information, i.e., coincident geochemical zones, would alter their significance.

From the results of the present survey the following geophysical work is recommended:

1. Extend the VLF and magnetic coverage to the west and south to adequately define the conductive zone containing B and C.

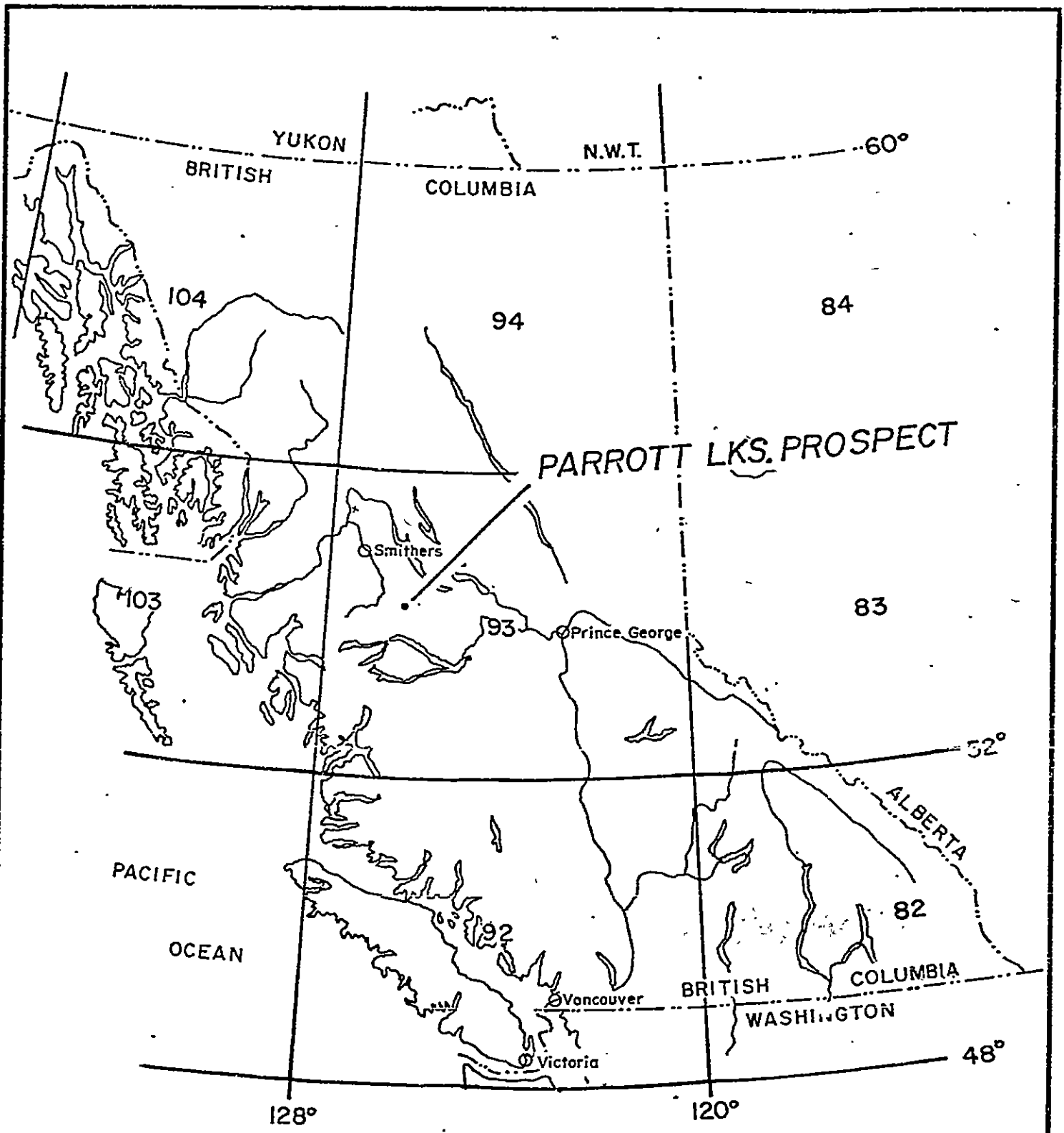
2. Fill-in the VLF and magnetic coverage with intermediate lines between 9N and 3N west of the baseline to eliminate the ambiguities in correlating the conductors from line to line.

3. Follow-up in the area containing anomalies A-D with horizontal loop EM and/or resistivity-IP to determine both the overburden thickness and the conductivity-thickness product.

SURVEY AND INSTRUMENT SPECIFICATIONS

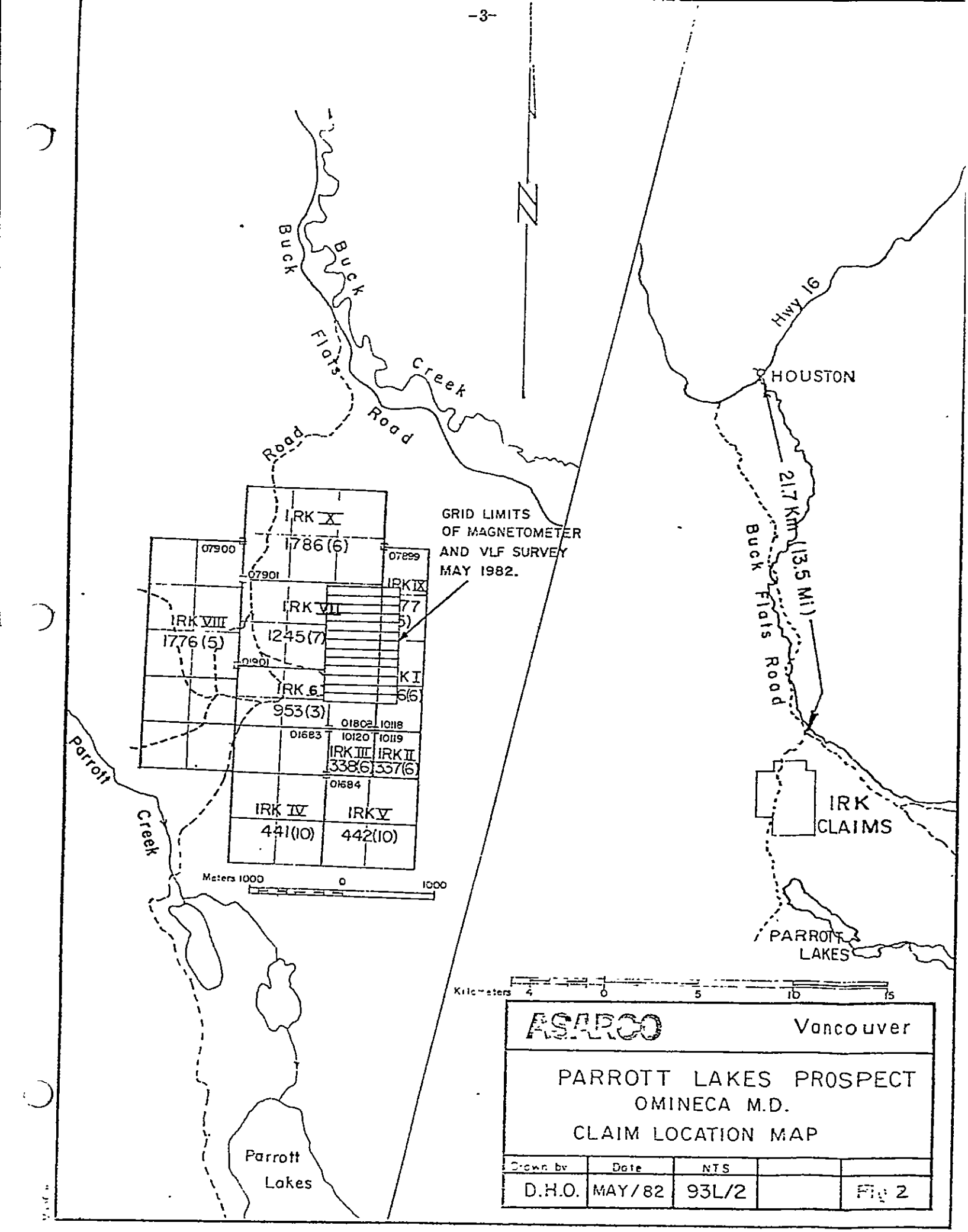
Magnetic Survey

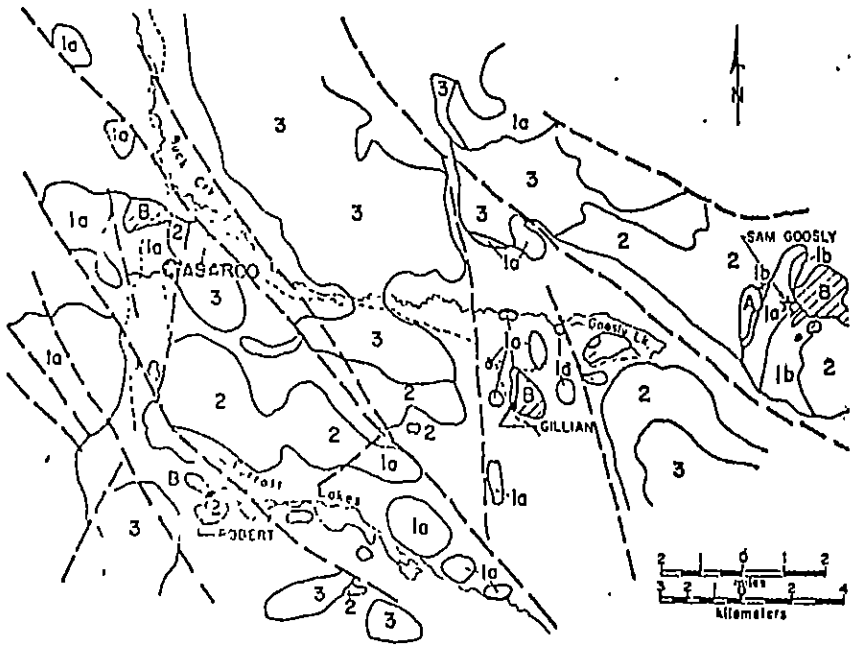
Instrument	Geometrics G826 Proton Magnetometer
Instrument Accuracy	± 1 gamma
Number of Stations	732 @ 20 meter station intervals
Coverage	14.9 Km
Field Time Required	7 man days



ASARCO				Vancouver
PARROTT LKS. PROSPECT				
LOCATION MAP				
Drawn by	Date	N.T.S.		Figure
D.H.O.	MAR./80	93L/2E		1

VanCal


Buck Flats Road
Buck Flats Road
Creek
Hwy 16
HOUSTON
21.7 Km (13.5 Mi)
Buck Flats Road
GRID LIMITS OF MAGNETOMETER AND VLF SURVEY MAY 1982.
IRK X
1786(6)
07900
07899
07901
IRK IX
IRK VII
IRK VIII
1776(5)
1245(7)
01901
KI
IRK 6
953(3)
01802
10118
01683
10120
10119
IRK III
IRK II
338(6)
337(6)
01684
IRK IV
IRK V
441(10)
442(10)
Meters 1000 0 1000
Parrott Creek
IRK CLAIMS
PARROTT LAKES
Parrott Lakes
Kilometers 4 0 5 10 15
ASARCO
Vancouver
PARROTT LAKES PROSPECT
OMINECA M.D.
CLAIM LOCATION MAP
Drawn by
Date
NTS
D.H.O.
MAY/82
93L/2
Fig 2



REGIONAL GEOLOGIC SETTING

PARROTT LAKES PROSPECT

QUATERNARY

Alluvium, till, gravel

EOCENE

3 — Buck Creek Volcanics - andesite and dacite flows, minor basalt

2 — Goosly Lake Volcanics - trachytic flows

B — Goosly Lake Intrusions - syenomonzonite, gabbro

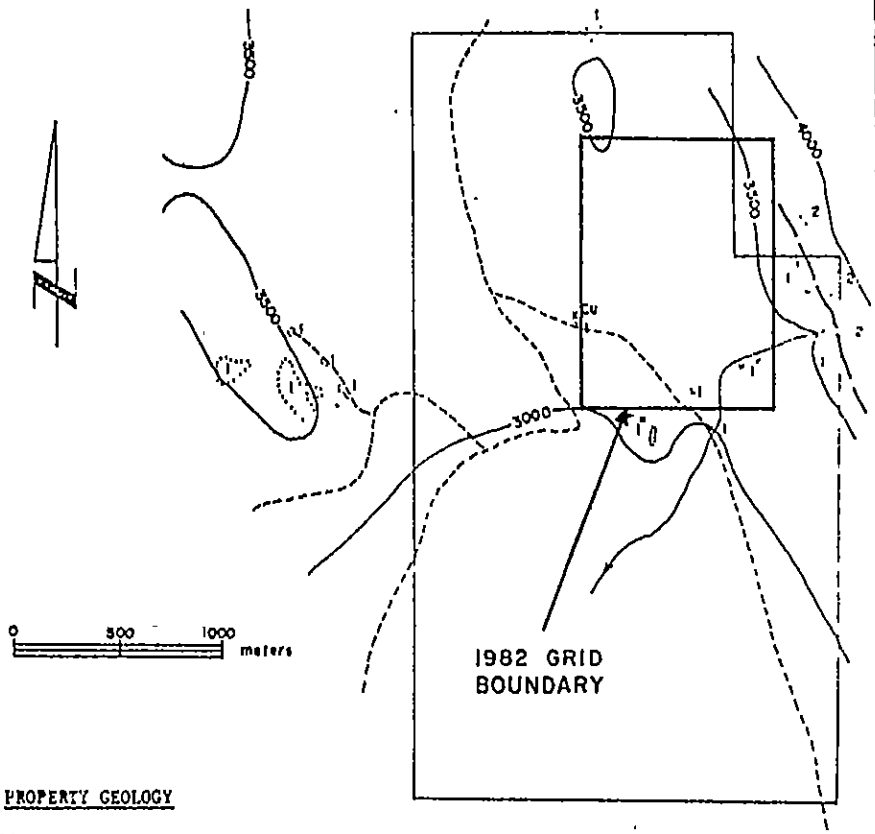
A — Nanika Intrusions - quartz monzonite

CRETACEOUS

1 — Tip Top Hill Volcanics - a. andesite to rhyolitic flows and pyroclastic rocks. b. sandstone, shale, conglomerate.

Major Fault

Mineral Prospect



PROPERTY GEOLOGY

EOCENE

2 — Buck Creek Volcanics - massive amygdaloidal to vesicular basalt, andesite and placite plus related pyroclastic rocks.

CRETACEOUS

1 — Tip Top Hill Volcanics - mainly red to dark grey crystal lithic-tuff lapilli-tuff, volcanic breccia and lahar.

-topographic contour

-outcrop

-access road

-limit of Zn anomaly

-claim boundary

ASARCO	Vancouver		
PARROTT LKS PROSPECT REGIONAL & PROPERTY GEOLOGY			
Drawn by	Date	N.T.S.	
D.G.M	9Nov.78	93L/2E	Fig. 3

VLF-EM

Instrument	Geonics EM-16
Instrument Accuracy	± 2% inphase and quadrature
Transmitter	NLK Seattle, Washington
Frequency	24.6 KHz.
Number of Stations	615 @ 20 meter station intervals
Coverage	12 Km
Field Time Required	7 man days

Line Surveying

Line surveying was conducted simultaneously with the geophysical surveys. A total of 14.9 kilometers of line were surveyed with hand held compass and chain. Stations were flagged and labeled at 20 meter intervals. No slope corrections were made.

DISCUSSION

VLF-EM.

The inphase-quadrature profile (Plate 2) located numerous sub-parallel conductors. These conductors follow the general northerly strike of the volcanic sequences as indicated by the magnetics. An analysis of the in-phase quadrature ratio along the profile indicate the majority of these conductors are due to a combination of overburden effects and shear zones.

An attempt was made to correlate the crossovers from line to line and to rate the crossovers as to their strength. This was done by filtering the inphase data using Fraser's method and contouring the resultant data with the aid of the original inphase and quadrature data (Plate 3). The method was effective in the northern half of the survey area but in the southern half, west of the baseline, there is a considerable amount of ambiguity in connecting crossovers from line to line. Fill-in work at 50 meter intervals and possibly 30 meter intervals south of Line 9N is required to resolve these crossovers.

Each conductor along the profiles was rated as to its rate of change of the inphase component (Fraser value). The strongest Fraser value over each conductor was then averaged. A total of 85 conductors were averaged giving a mean strength of 16.2 Fraser units and a standard deviation (S.D.) of 11.6. The conductors shown in Plate 1 are indicated as strong, if their values were 2 S.D.'s above the mean, intermediate between 1 and 2 S.D.'s above the mean, and weak if less than 1 S.D. above the mean.

Although this method is rather arbitrary since crossover strengths are affected not only by conductivity but also by depth, it does lend itself to correlating anomalies from one profile to another.

The fault indicated on Plate 1 was suggested by the strong reverse inphase and quadrature crossovers. From west to east both inphase and quadrature change abruptly from negative or zero to positive. The inphase then stays high averaging 20%, east, off the survey area. This behavior is fairly

typical of a low resistivity bedrock to the west in contact with a high resistivity zone to the east.

Conductors A, B, C and D, shown on Plate 1, are considered to have the best potential for economic mineralization. Conductors, A, B and C are similar in nature in that they exhibit both a strong inphase crossover and corresponding weaker quadrature crossovers. This relationship is indicative of a good conductor.

Anomaly D exhibits a strong inphase crossover but has a reverse quadrature crossover. The anomaly was picked because it indicates a local increase in the conductivity along the zone.

When interpreting VLF data some important points should be kept in mind.

Very Low Frequency (VLF) EM geophysically is a misnomer. The frequencies are very high in the range of 18-25 KHz, as compared to 222 - 3000 Hz used in most moving source surveys (HEM). The high frequencies involved are not always well suited for prospecting for conductors especially in environments with conductive overburden. At 25 KHz the skin depth for an overburden resistivity of 10 ohm meters is only 10 meters. This limited search depth is not the only or even the major problem. The important point is that in a highly conductive medium geometric irregularities such as changes in overburden thickness can produce large magnitude crossovers which are nearly identical in shape as those originating from bedrock conductors.

It is then very important to be able to determine the overburden conductivities and to screen these conductors by other methods.

If the target sulphide contains a significant increase in its magnetite/pyrrhotite content this method (magnetics) can be very effective. The use of a lower frequency EM system and IP/resistivity can also be used to determine both overburden resistivities as well as screen the bedrock conductors as to their conductivity-thickness product.

MAGNETICS.

The general trend of the magnetics as shown in contour form on Plate 4 indicates the underlying volcanics to be controlled by a northerly trending structure (anticlinal?). From west to east the magnetics show a slight increase in intensity, the highest values being centered around 3 + 50W in the southern edge and 1 + 50W on the northern edge of the survey. The field then begins a gradual decline until, at the baseline, a strong negative gradient is seen. This rapid change in the magnetic character would suggest a change to a more acid phase of the volcanic sequence.

Of possible economic interest are the two narrow north trending magnetic zones. The first zone centered on Line 9N 3 + 50W has a strike length of 400 meters. The width and magnitude of the anomalies on Lines 10N and

7N suggest a pyrrhotite /magnetite rich vein approximately 10 meters thick. A comparison of this zone to D. H. Olson's November, 1981, overburden sampling for Ag (not presented) indicates a very good correlation between this zone and a north-south anomalous Ag trend.

The second zone is similar to the first and appears to be an offset to the east of the first zone (Line 7N, station 3+ 00W). The strike length of this zone is at least 400 meters and is not closed off to the south.

Jeffrey R Porter

JRP:am

JEFFREY R. PORTER
Geophysicist

APPENDIX "A"

EXPENDITURES - PARROTT LAKES PROSPECT

IRK I, VI, VII & IX Claims

(22 Man Days, May 4 - 14, 1982 inclusive)

FOOD AND ACCOMMODATION @ $54.45/man day	$ 1,197.94
4 WHEEL DRIVE VEHICLE - gas, oil & travel expense	1,173.30
REPORT PREPARATION - 5 days @ $100/day (drafting, printing, etc.)	500.00
MISCELLANEOUS SUPPLIES - flagging, topofil thread,etc.	61.69
WAGES - G. Cressman - 11 days	1,100.00
D. Olson - 11 days	1,412.40

(May 6 - 12/82 inclusive, 14 man days establishing grid 14.9 kms., Geometrics G-826A magnetometer survey- 14.9 kms. and VLF Geonics EM 16 Survey 12.0 kms.)

TOTAL $ 5,445.33

ASARCO

Geophysical Office — Exploration Department

June 3, 1982

E. W. Perkins
Manager

CERTIFICATION

I, Jeffrey R. Porter, of Salt Lake City, Utah, hereby certify that:

1. I am a graduate of the University of Utah, in 1971, with a BS degree in geophysics.
2. I have been practising my profession of mineral exploration and exploration geophysics for ten years.
3. I am a member of the Society of Exploration Geophysicists and the Utah Geophysical Society.

Jeffrey R Porter

JEFFREY R. PORTER

ASARCO

Geophysical Office — Exploration Department

E. W Perkins
Manager

June 3, 1982

CERTIFICATION

I, Glen J. Cressman, of Salt Lake City, Utah, hereby certify that I have been employed as a field and laboratory technician in geophysical mineral exploration for the past sixteen years.

Glen J. Cressman

GLEN J. CRESSMAN

VLF - EM AND TOTAL FIELD GROUND

MAGNETIC SURVEYS

IRK I, 6, VII, and IX CLAIMS (PAR GROUP)

PARROTT LAKES AREA

OMINECA M.D.

93 L/2E

INTRODUCTION

During the period May 4 to May 14, 1982 a 2 man crew consisting of G. Cressman, laboratory technician in geophysical mineral exploration and D. Olson, P. Eng., geologist and supervisor, carried out geophysical surveys on the IRK 1, 6, VII, and IX claims.

Discussion of the surveys data, along with a summary, recommendations and detailed expenditures are outlined by J. R. Porter, geophysicist, in the attached reports dated June 3, 1982.

LOCATION

The IRK claims of the Par Group are located in the Omineca Mining Division approximately 26.8 km. by gravel road south from Houston, B.C.

GENERAL GEOLOGY

The geology of the area is described in the B.C. Department of Mines and Petroleum Resources, Gem 1970, pp. 119 - 125. Andesitic to rhyolitic flow and pyroclastic volcanic rocks believed to be part of the Tip Top formation of Cretaceous age are exposed in rock outcrops sparsely distributed over the IRK k, 6, VII, VIII and IX claims. The Buck Creek volcanics which are essentially flat lying are exposed within the east portion of IRK I and IX claims.

Most of the claims area is covered with a mantle of glacial till. The lastest ice movement is believed to have been from west to east.

PURPOSE OF WORK - RESULTS

The geophysical surveys were carried out to test for silver bearing sulfide zones in bedrock beneath glacial till, in the vicinity of anomalous Ag-Pb-Zn soil values.

As discussed by Mr. Porter in the accompanying reports, the VLF-EM and magnetic surveys located four conductors which appear to have an increased potential for mineralization of economic significance.

The results suggest that further work is warranted.

D. H. Olson

June 15, 1982

References

Church, B.N., 1970; B.C. Department of Mines and Petroleum Resources, GEM 1970, pp. 119 - 125.

MacIntyre, D.G., November 1978: Assessment Reports, Soil Geochemistry - Parrott Lakes Prospect - Irk VI claim.

Gale, R.E., August 15, 1979: Assessment Report - Soil Geochemistry, Parrott Lakes Prospect, Irk VII, VIII, IX and X claims.

Mullan, Ashton, W. Report on Induced Polarization and Resistivity Survey on the Parrott Lakes Prospect, November 27, 1979.

CERTIFICATE

I, D. H. Olson of 8125 Gray Avenue, Burnaby, B.C. hereby certify:

1. I am a registered Professional Engineer in the Province of British Columbia.

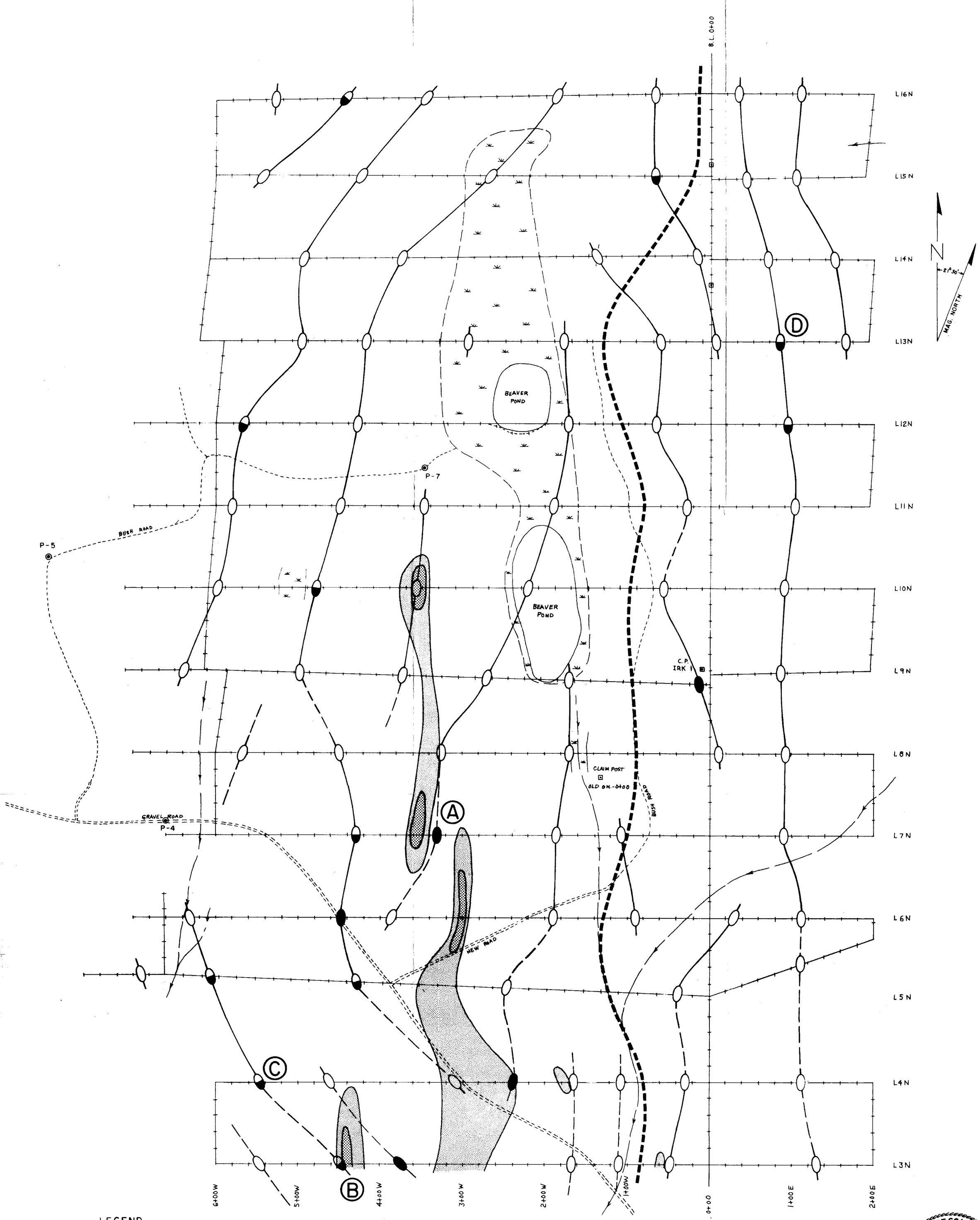
2. I am a university graduate with the degree B.C. - Geology, University of British Columbia, 1950.

3. I have practised my profession for the past 30 years.

4. I am presently employed as a Geologist with Asarco Exploration Company of Canada Limited.

5. The information contained in this report was under my direct supervision and was compiled by myself and J. R. Porter.

D. H. Olson
Geologist
June 15, 1982



LEGEND

VLF ANOMALY
- STRONG
- INTERMEDIATE
- WEAK

CONDUCTOR AXIS
- PROBABLE
- POSSIBLE

MAGNETICS
- 58,000 CONTOUR
- 57,900 CONTOUR

INTERPRETED FAULT

NOTE: Chain and Compass Survey.

100 50 0 100 200 Meters

SCALE

LEGEND
- GRAVEL ROAD
- BUSH ROAD
- CREEK
- SWAMP
- MARGIN OF SWAMP
- ASARCO DRILL HOLES

IRK 6 IRK I L.C.P. IRK III IRK II

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
10,449
NO.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. H. OLSON

ASARCO Vancouver

PARROTT LAKES PROSPECT
OMINECA M.D.
IRK CLAIMS, I, 6, VII, IX.
INTERPRETATION MAP

Drawn By	Date	NTS		
G.J.C.	MAY/82	93L/2E	1:2500	PLATE 1

B.L. 0400

L16N

L15N

L14N

L13N

L12N

L11N

L10N

L9N

L8N

L7N

L6N

L5N

L4N

L3N

B.L. 0+00

6+00W

5+00W

4+00W

3+00W

2+00W

1+00W

1+00E

2+00E

BEAVER POND

BEAVER POND

P-7

P-5

BUSH ROAD

GRAVEL ROAD

P-4

C.P. IRK. I

CLAIM POST

OLD ON.-0+00

BUSH ROAD

NEW ROAD

N

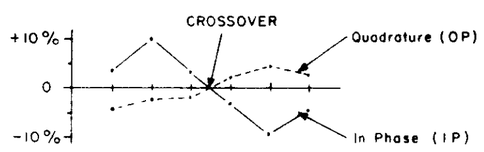
21° 30'

MAG. NORTH

N

DIRECTION TO STATION USED (1409)
SEATTLE, WASH. (NLK)

NOTE: Chain and Compass Survey.



100 50 0 100 200 Meters

SCALE

LEGEND

INSTRUMENT - GEONICS EM-16

STATION - SEATTLE, WASH. (NLK)

VERTICAL SCALE: 1 Cm = ±10%

GRAVEL ROAD

BUSH ROAD

CREEK

SWAMP

MARGIN OF SWAMP

ASARCO DRILL HOLES

IRK 6 IRK 1 L.C.P. IRK III IRK II

MINERAL RESOURCES BRANCH
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PROFESSIONAL ENGINEER
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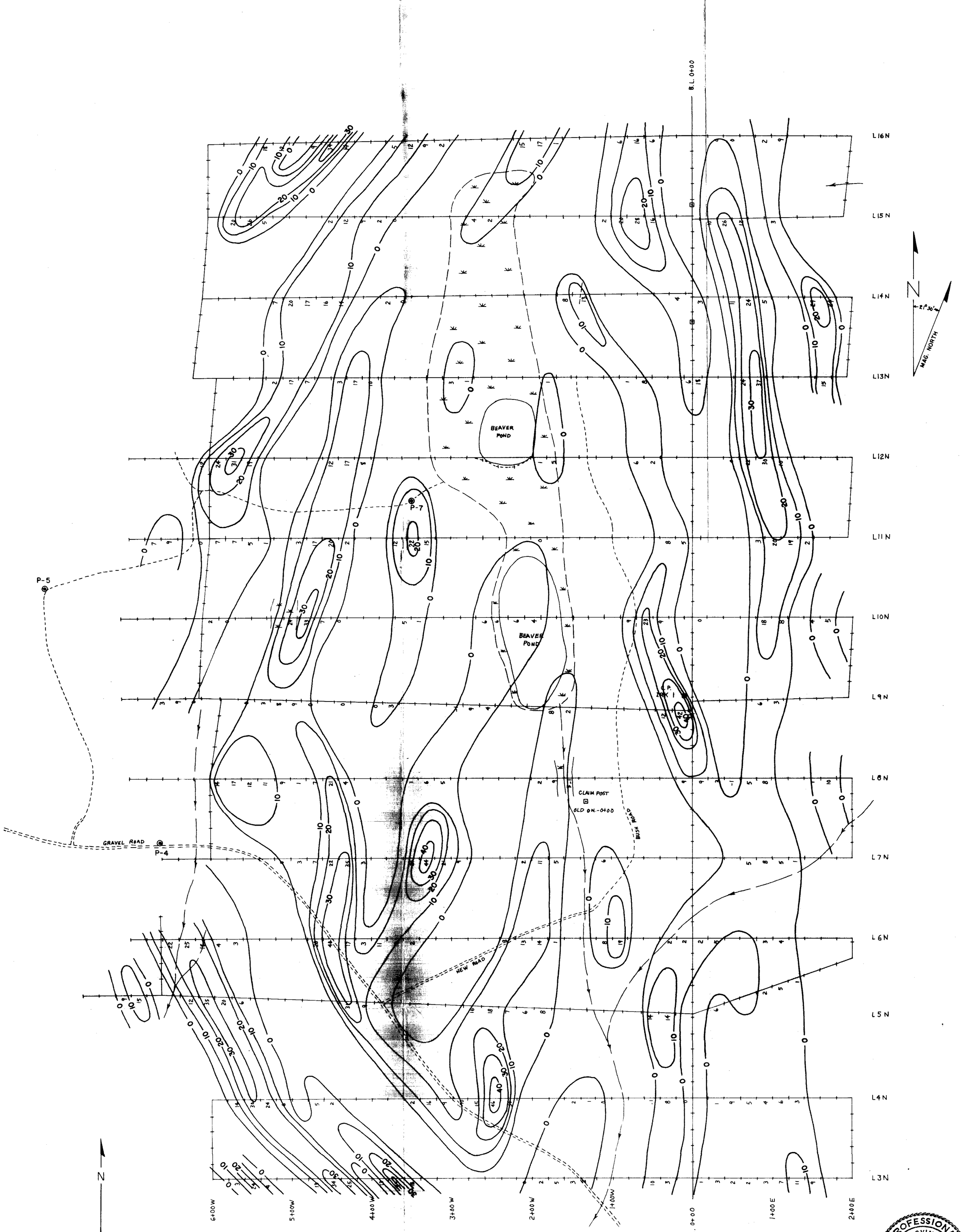
D. H. OLSON

ASARCO Vancouver

PARROTT LAKES PROSPECT
OMINECA M.D.
IRK CLAIMS, I, 6, VII, IX.
VLF PROFILES

Drawn by	Date	N.T.S.		
G.J.C.	MAY/82	93L/2E	1:2500	PLATE 2



NOTE: Chain and Compass Survey.

DIRECTION TO STATION USED (140°)
SEATTLE, WASH. (NLK)

100 50 0 100 200 Meters
SCALE

LEGEND

INSTRUMENT - GEONICS EM-16
STATION - SEATTLE, WASH. (NLK)
CONTOUR INTERVAL - 10 Fraser Units

GRAVEL ROAD
BUSH ROAD
CREEK
SWAMP
MARGIN OF SWAMP
ASARCO DRILL HOLES

IRK 6 IRK I
L.C.P.
IRK III IRK II

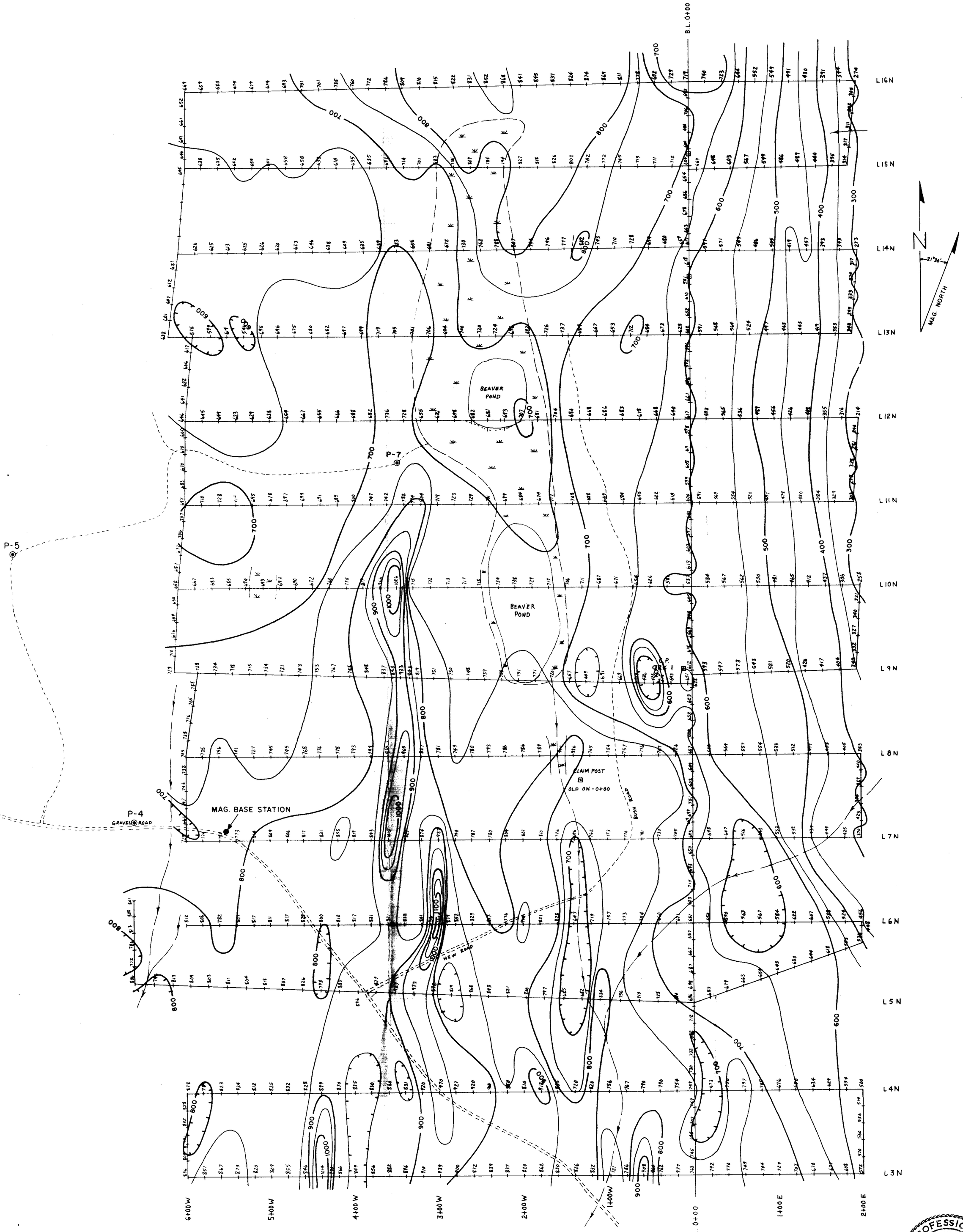
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
10449
NO

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. H. OLSON

ASARCO Vancouver

PARROTT LAKES PROSPECT
OMINECA M.D.
IRK CLAIMS, I, 6, VII, IX.
VLF SURVEY (FRASER FILTER CONTOURS)

Drawn by	Date	N.T.S.	SCALE	
G.J.C.	MAY/82	93L/2E	1:2500	PLATE 3



NOTE: Chain and Compass Survey.

LEGEND

INSTRUMENT - GEOMETRICS G-826 A

ACCURACY - ± 1 GAMMA

TOTAL INTENSITY - ADD 57,000 GAMMAS

CONTOUR INTERVAL - 50 GAMMAS

====== GRAVEL ROAD

----- BUSH ROAD

——→—— CREEK

SWAMP

— — — MARGIN OF SWAMP

ASARCO DRILL HOLES

IRK 6 | IRK I | L.C.P. | IRK III | IRK II

100 50 0 100 200 Meters

SCALE

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
10449
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PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. H. OLSON

ASARCO Vancouver

PARROTT LAKES PROSPECT
IRK CLAIMS, I, 6, VII, IX.
MAGNETOMETER SURVEY

Drawn by	Date	N.T.S.	SCALE	
G.J.C.	MAY/82	93L/2E	1:2500	PLATE 4