

4651

GREAT PLAINS DEVELOPMENT
COMPANY OF CANADA, LTD

GEOLOGY AND GEOPHYSICAL REPORT

ON

BALL GROUP 1 AND BALL GROUP 2

BRITISH COLUMBIA

LIARD MINING DIVISION

104 G/8

Department of
Mines and Petroleum Resources

ASSESSMENT REPORT

NO. **4651** MAP

M.D. McInnis

Rik Visagie

August, 1973.

TABLE OF CONTENTS

SUMMARY

INTRODUCTION

- A. Location and Access
- B. History

EXPLORATION AND DEVELOPMENT

- A. Geological Mapping
- B. Geophysical Surveying

GEOLOGY

- A. Regional Setting
- B. Rock Types
- C. Structural Geology

CONCLUSIONS AND RECOMMENDATIONS

APPENDIX

- Estimate of Expenditures
- Statement of Qualifications

ATTACHMENTS

MAPS

- #1 Geology
- #2 Base Map & Claims Sketch
- #3 Gradient Self Potential Plan
- #4 Apparent Resistivity Plan
- #5 " Chargeability "
- #6 Compilation Plan
- #7 Claim Location Plan

SUMMARY

The Ball Group No. 1 and Ball Group No. 2 consist of sixty-three contiguous claims. The following is a schedule of the land holdings and data relating to them:

Ball Group No. 1

<u>Claim</u>	<u>Record Nos</u>	<u>Recorded Owner</u>	<u>Anniversary Date</u>
ROG 19, 20	48109, 10	Great Plains Devel.	August, 25/73
ROG 22-26	48111-115	Great Plains Devel.	August, 25/73
ROG 33-40	48119-26	Great Plains Devel.	August, 25/73
ME 3-14	46261-72	Great Plains Devel.	August, 19/74
MENT 1-7	55079-85	Great Plains Devel.	August, 18/73
BARE 1, 2	69895, 96	Great Plains Devel.	July, 18/74

Ball Group No. 2

ME 1, 2	46259, 60	Great Plains Devel.	August, 19/74
ME 15-18	46273-76	Great Plains Devel.	August, 19/74
ROG 1-4	48091-94	Great Plains Devel.	August, 25/74
ROG 5,7	48095, 97	Great Plains Devel.	August, 25/74
ROG 6,8	48096, 98	Great Plains Devel.	August, 25/74
ROG 9-18	48099-108	Great Plains Devel.	August, 25/74
ROG 27,29,31	48116, 17, 18	Great Plains Devel.	August, 25/74

All claims in both groups are located in the Liard Mining Division.

Geological work for which assessment Credit of \$2,603.00 is

requested was carried out during the period June 23 to July 20, 1973. Geophysical work totalling \$3,622.00 was carried out during the period July 4, to July 16, 1973.

Some of the claims in the groups have had assessment credit applied in previous years. This report details the geological and geophysical work carried out on those claims coming due this year. As a result of the work performed, assessment credit is requested on these claims as follows:

Ball Group No. 1

<u>Claims</u>	<u>Record Nos</u>	<u>Assessment Credit Requested</u>	<u>Total</u>
ME 3-14	46261-72	1 year/claim	12
ROG 19,20	48109, 10	1 year/claim	2
ROG 22-26	48111-115	1 year/claim	5
ROG 33-40	48119-26	1 year/claim	8
MENT 1-7	55079-85	1 year/claim	7
			<hr/> 34

Ball Group No. 2

ME 1, 2	46259, 60	1 year/claim	2
ME 15-18	46273-76	1 year/claim	4
ROG 1-18	48091-108	1 year/claim	18
ROG 27, 28, 31	48116-18	1 year/claim	3
			<hr/> 27

The total value of the requested assessment credit and the total cost of the geological and geophysical work performed on each of the claim groups is as follows:

<u>Group</u>	<u>Requested Assessment Credit</u>	<u>Cost of Work Performed</u>
Ball Group No. 1	\$3,400.00	\$3,486.00
Ball Group No. 2	\$2,700.00	\$2,739.00

This report will accompany maps and statement of expenditures and is hereby submitted to record the above assessment work.

INTRODUCTION

The Ball Group 1 and 2 are part of a larger claim block owned by Great Plains. Since 1971, integrated programs of geological mapping, geochemical sampling and geophysical surveying have been carried out over most parts of the claim block. As a result of the previous work programs, a zone of interest was delineated in the southern portion of the block. The area adjacent to this zone was unmapped so in 1973, a program of geological mapping and I.P. surveying was instigated to improve our understanding of the local geology and to focus in on high-priority target areas. This report presents the results of the 1973 surveys.

A. Location and Access

The TARA claim group is located along the eastern front of the Coast Range Mountains approximately fifty-two air miles south of Telegraph Creek, B.C. The claims lie six miles west of the Iskut River near the confluence of Ball Creek and a creek locally known as Devil Creek, at $129^{\circ}25'$ west longitude and $57^{\circ}15'30''$ north latitude. They are at elevations ranging from 2,500 feet to 6,000 feet in generally steep, rugged terrain.

Supplies and equipment can be obtained from a supplier at Eddontenajon Lake and can be freighted south by truck to within ten miles of the property. From here, helicopters are required to ferry the supplies into the property. Rugged terrain precludes servicing with fixed-wing aircraft.

B. History

The Ball Creek prospect was located in 1970 following a

stream sediment sampling and prospecting program carried out by Great Plains personnel. The results of this program led to the staking of the ME and ROG groups, a total of fifty-four claims, which were staked in August, 1970.

In 1971 a program was instituted to geologically map and geochemically sample the claim blocks. Results from this work expanded the area of interest and the TARA and MENT claims were staked.

In 1972, a combined program of linecutting, geochemical sampling, geological mapping and geological surveying was instituted. Sufficient encouragement was obtained to warrant further investigation. Eight NOM claims were staked to cover open ground.

At the end of May 1973 a program of geological fill-in mapping was instituted but because of heavy snow cover was postponed until the end of June. An I.P. survey was conducted over areas north of the Cliff zone during the first weeks of July. Five claims (BARE 1, 2, and BR 1, 2, 3) were staked to give additional coverage.

EXPLORATION AND DEVELOPMENT

A. Geological Mapping

Fill-in mapping to define the contacts and the continuity of previously mapped portions of the property was undertaken in the area immediately north of Ball Creek. The mapping was carried out on a scale of one inch to 400 feet using a compass and altimeter for control. Chaining was utilized wherever previously established grid stations were close enough to provide control. The information was then transferred to a one inch to 400 feet topographic base map.

B. Geophysical Surveying

Approximately 42 line miles of grid layout and induced polarization surveying were carried out along lines 72 N to 96N inclusive. The survey was performed for Great Plains by Cochrane Consultants Ltd. The following summary and conclusions are excerpted from the consultant's report:

" 1. During the first part of July, 1973 4.2 line miles of time domain (pulse - type) induced polarization surveying was completed on claims owned by Great Plains Development Company of Canada Ltd.

The property is situated in the Eddontenajon area of Northern British Columbia.

2. The property lies on the Spectrum Mountain range near the transitional physiographic zone between the rugged northern Coast mountains and the Stikine and Klaskan plateaus. Access is by helicopter from the Eddontenajon road 10 miles to the east of the property.

3. A Hewitt Enterprises HEW-200 IP unit was employed on the project, in a Wenner field array with an "A" spacing of 200 feet. The time constants are as follows:

(a) 2 seconds current on

(b) 0.4 second delay after (a) above

(c) 1.2 seconds integration of residual voltage

Normally four two second pulses (two cycles) were automatically accumulated on both the dV and IP meters.

4. Gradient self potential, apparent resistivity and apparent chargeability data were recorded, and this information is presented graphically in figures 3 to 5 inclusive. (map pocket, back of report)

5. Gradient self potential response ranged from close to zero to 190 millivolts per 200 feet. Values in excess of 50 m.v. are classed as anomalous and 14 such positions were discovered. The most obviously anomalous SP area occurs near the west end of line 32N in an area of high apparent chargeability response.

6. Apparent resistivity response ranged from a low of 105 (?) to a high of 11,171 ohm-feet and the arithmetic mean is 2374 ohm-feet. There are no sharp resistivity family boundaries indicated in the frequency histogram, however, there is some suggestion that values in excess of 4000 and below the 1000 ohm-foot level may be indicative of a different lithologic, or "phase" of bedrock type.

7. Apparent chargeability response ranged from a low of 4.7 to a high of 63.6 milliseconds and the arithmetic mean is 20.6 milliseconds. Several stations are characterized by negative excessively high response and these positions often correlate with linear topographic depressions believed to be water and/or ice filled fault or shear zones.

8. A rather large complex zone of anomalously high chargeability is located in the south west survey sector and deeply incised stream valleys exposed rusty weathering

bedrock. The high chargeability and anomalous SP response therefore is apparently due to the presence of sulphides in the order of 4 volume percent or more. The distribution of the sulphide however, appears to be rather patchy and complex in areal distribution.

9. Correlation with geochemical and/or geological data, of such is available, is suggested before investigation of the geophysical anomalies is attempted.

10. High Chargeable "peaks" are often found to be due to the presence of iron sulphides whereas the copper and/or molybdenum zones often exist on the flanks of apparent chargeability anomalies."

GEOLOGY

A. Regional Setting

The Ball Creek region is situated in a geologically complex area which is the juncture of three large scale tectonic features. Approximately twenty miles to the west lies the northwest trending Coast geanticline, a complex of interlocking granitic bodies and metamorphic screens. Trending northeasterly across the regional northwesterly trend is a tectonically-positive lobe of crystalline and metamorphic rocks known as the Stikine Arch. To the south, the Jura-Cretaceous Bowser Basin, a successor basin, abuts against the Arch. Superimposed on these major tectonic elements is a system of north-south trending normal faults which relate to Tertiary volcanism.

B. Rock Types

The rocks underlying the property can be grouped into six

general rock categories. The crowded andesite porphyry, felsite, breccia and feldspar andesite porphyry are part of a Jura-Cretaceous intrusive complex which has intruded an Upper Triassic volcanic pile. A description of the units is as follows:

Unit 1 and 2

Unit 1 (welded tuff) and Unit 2 (agglomerates, crystal lithic tuffs, volcanic breccias and volcanic flows) are part of a folded Triassic succession. Discrimination of distinct rock types within this general classification is virtually impossible due to lateral and vertical changes within a single unit. Detailed breakdown is further complicated by difficult interpretation of stratigraphy due to faulting. Therefore, for mapping purposes, the individual volcanic members have not been divided.

Unit 3

Unit 3, the crowded andesite porphyry, is a distinctive rock type consisting of up to 60% phenocrysts set in a fine grained mosaic groundmass. Well formed laths of hornblende make up approximately 25% of the phenocrysts while the remainder consists of euhedral plagioclase. The average crystal length of the plagioclase phenocrysts is 3 to 4 mm with the occasional crystal up to 6 mm. In some samples, occasional large, euhedral potash feldspar phenocrysts up to 9 mm are visible.

Unit 4

Unit 4 is a breccia consisting of broken blocks of Unit 3 and

dioritic porphyry set in an dioritic intrusive matrix.

Unit 5

The felsite is a white to light green to grey pyritiferous felsite in which the mafic minerals have been destroyed. Optical determinations have shown that the rock consists of approximately 50-60% phenocrysts set in a fine-grained mosaic, granular groundmass. The phenocrysts are generally feldspar and can attain lengths up to 6 mm. No mafic phenocrysts are visible; however, the groundmass contains abundant carbonate, sericite, quartz and pyrite. Plagioclase is widely replaced by carbonate. The felsite occurs in an area north of the fill in map area as a solid mappable unit. It also appears in sill like bodies in and between units of relatively fresh rock near faulted areas throughout the property in unmappable units.

Unit 6

Unit 6, the feldspar andesite porphyry, is a sill-like body consisting of up to 60% feldspar phenocrysts set in a fine grained, dark green matrix. The feldspars exhibit trachytic texture and often are found as large as 6 mm in length. The unit is slightly magnetic and shows very little alteration effects.

STRUCTURAL GEOLOGY

The property lies on the east arm of a northerly trending syncline which has broadly warped the Upper Triassic strata. It is not known whether or not this structure has controlled or influenced

the intrusion of the diorite stock.

Interpretation of our photo linears suggest that the main structural directions are east-northeast, north, northwest, and north-south. Measurements of prominent joint sets indicate that fracturing tends to be parallel to these major directions.

Localized shatter zones, breccias and small faults have been noted throughout the property. Tectonic adjustments along these faults have produced some fault contacts between rock types.

CONCLUSIONS AND RECOMMENDATIONS

Completion of the geological mapping has confirmed the continuity of the intrusive between previously mapped areas and provided a clearer picture of the geology on the property.

A large complex zone of anomalous chargeability and SP is apparently due to the presence of sulphides. In addition, the IP results roughly outlined a lithologic change.

It is recommended that a synthesis of all existing geochemical geological and geophysical data be carried out with a view to selecting the optimum location for a drill hole.

APPENDIX

ESTIMATE OF EXPENDITURES

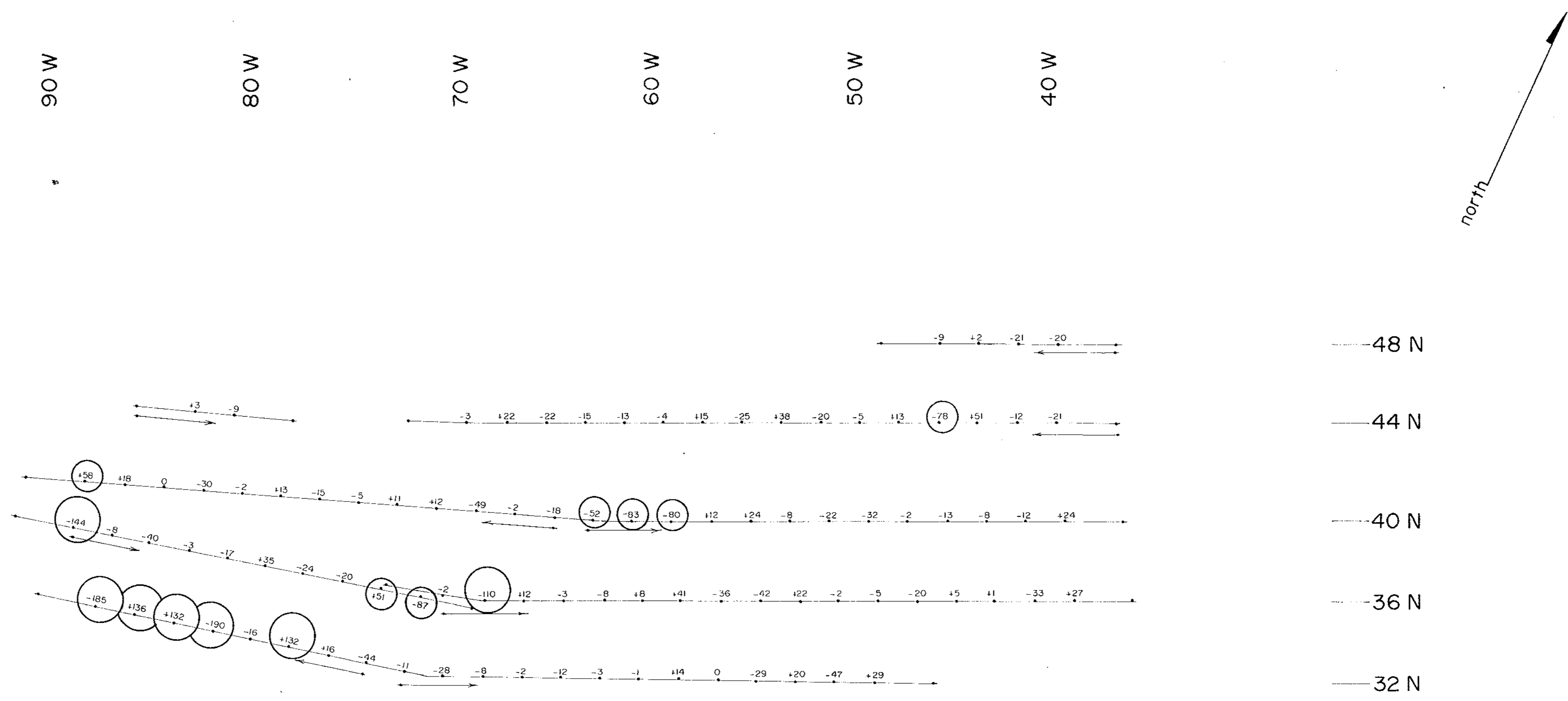
(Please note that the total expenditures have been pro-rated to cover the groupings, Group No. 1 - 56%, Group No. 2 - 44%)

BALL GROUP NO. 1

I.P. Survey	\$2,028.32
Geological Mapping	
Rick Visagie, geologist \$35/day for 14 days	\$ 274.40
B. Edmonson, assistant \$30/day for 14 days	\$ 235.20
Domicile \$12/man/day	\$ 188.16
Helicopter - 4 hours at \$250/hour	\$ 560.00
Truck, radio rental and expenses	\$ 199.92
	<hr/>
	\$3,486.00
	=====

BALL GROUP NO. 2

I.P. Survey	\$1,593.68
Geological Mapping	
Rick Visagie, geologist \$35/day for 14 days	\$ 215.60
B. Edmonson, assistant \$30/day for 14 days	\$ 184.80
Domicile \$12/man/day	\$ 147.84
Helicopter - 4 hours at \$250/hour	\$ 440.00
Truck, radio rental and expenses	\$ 157.08
	<hr/>
	\$2,739.00
	=====

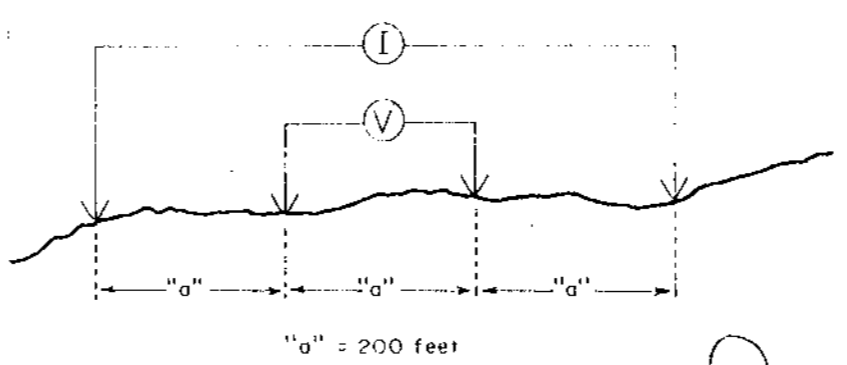


To accompany report by M.D. McInnis and R. Visagie on Ball Groups 1 & 2 Iskut River area, Liard Mining Div. dated August, 1973.

Legend: Direction of travel of instrument
 50 to 100 mv./200'
 Greater than 100 mv./200'
 All readings in millivolts per 200 feet (mv./200')

Time Constants - HEWITT 200 I.P.: Current On = 2.0 seconds
 Delay = 0.4 seconds
 Integration Time = 1.2 seconds

Wenner Array:

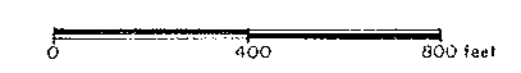


M.D. McInnis



Great Plains Development of Canada, Limited
 British Columbia
 Ball Creek - Iskut River Area
 GRADIENT SELF POTENTIAL PLAN

Liard Mining Division - N.T.S. 104 G
 Scale: one inch equals 400 feet
 Drawn by B.C.

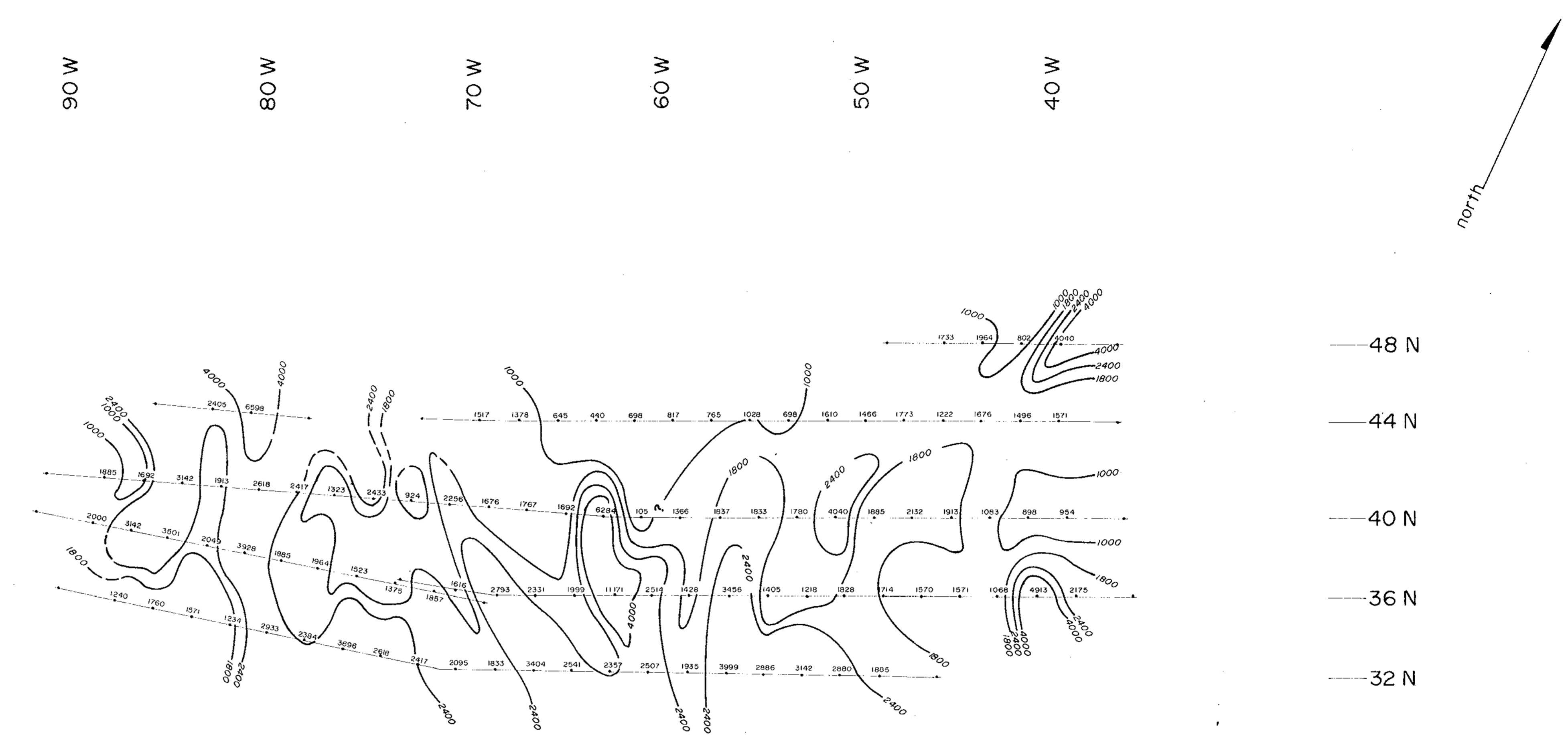
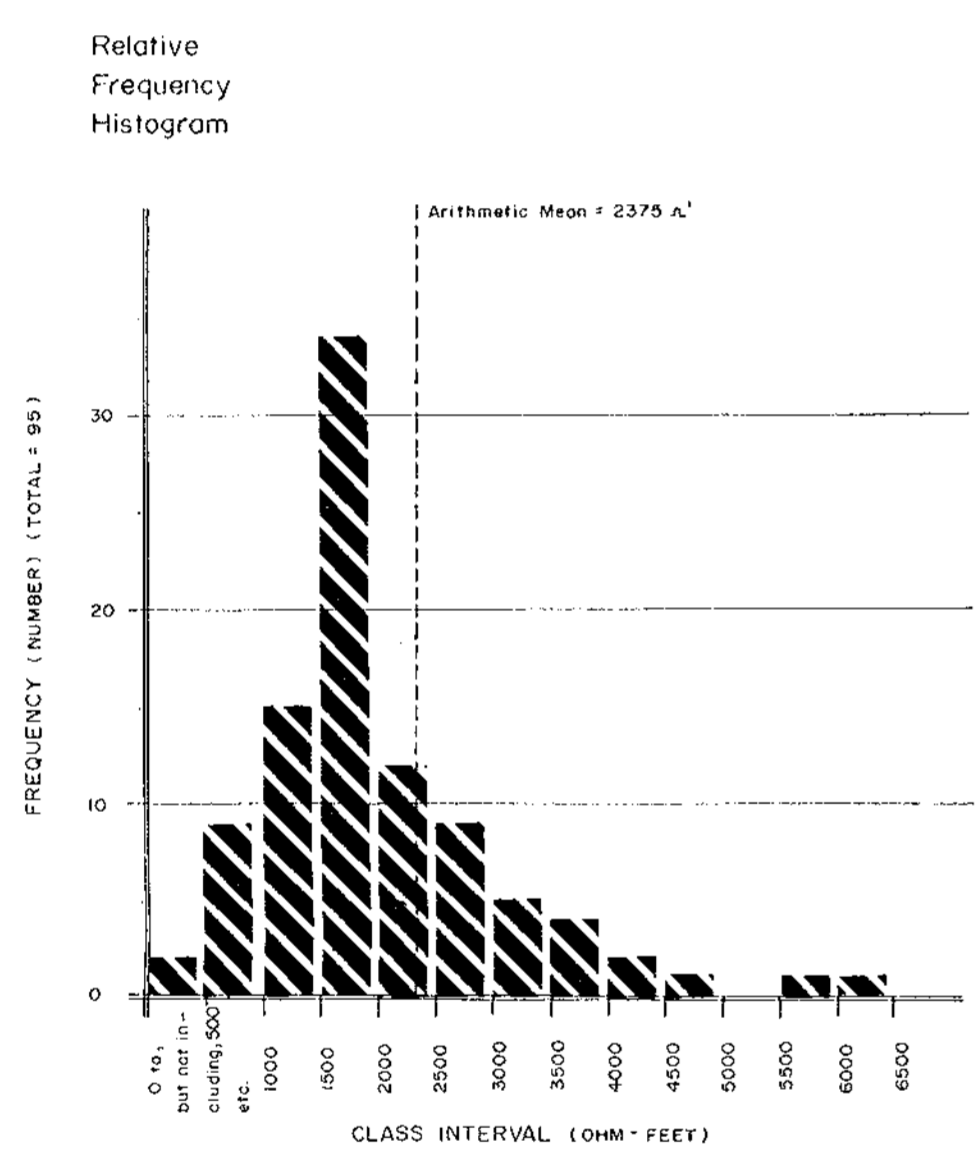


To accompany a report by D.R. Cochrane, P.Eng., dated August 1, 1973



Plate no. 3
 Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 4651 MAP #3

4651-M3



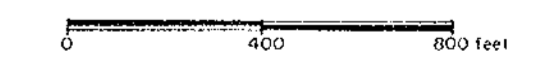
To accompany report by M.D. McInnis and R. Visagie on Ball Groups 1 & 2 Iskut River area, Liard Mining Div. dated August, 1973.

Great Plains Development of Canada, Limited

British Columbia
Ball Creek - Iskut River Area

APPARENT RESISTIVITY PLAN

Liard Mining Division - N.T.S. 104 G
Scale: one inch equals 400 feet.
Drawn by B.C.



To accompany a report by D.R. Cochrane, P. Eng., dated August 1, 1973.

Plate no. 4

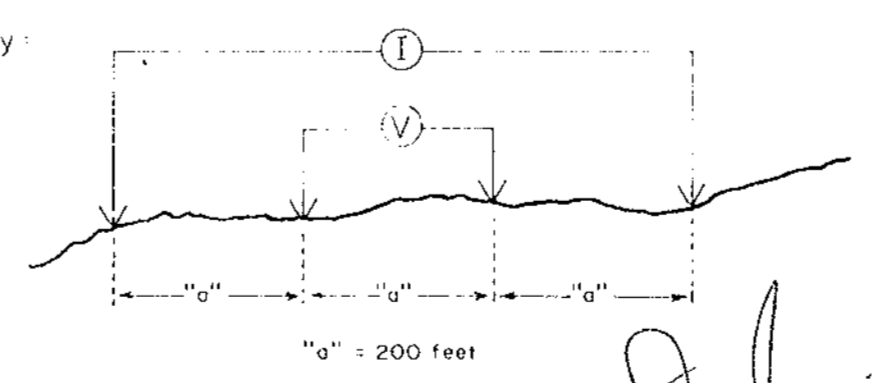


Cochrane Consultants Limited
2102 D-111 Street
Delta, B.C. V4L 1Y1

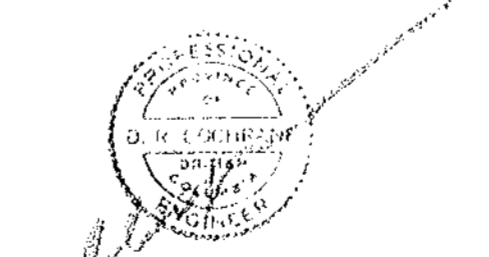
Department of
Business and Petroleum Resources
ASSESSMENT REPORT
NO. 4651 MAP #4

Time Constants - HEWITT 200 I.P.:
Current On - 2.0 seconds
Delay - 0.4 seconds
Integration Time = 1.2 seconds

Wenner Array:

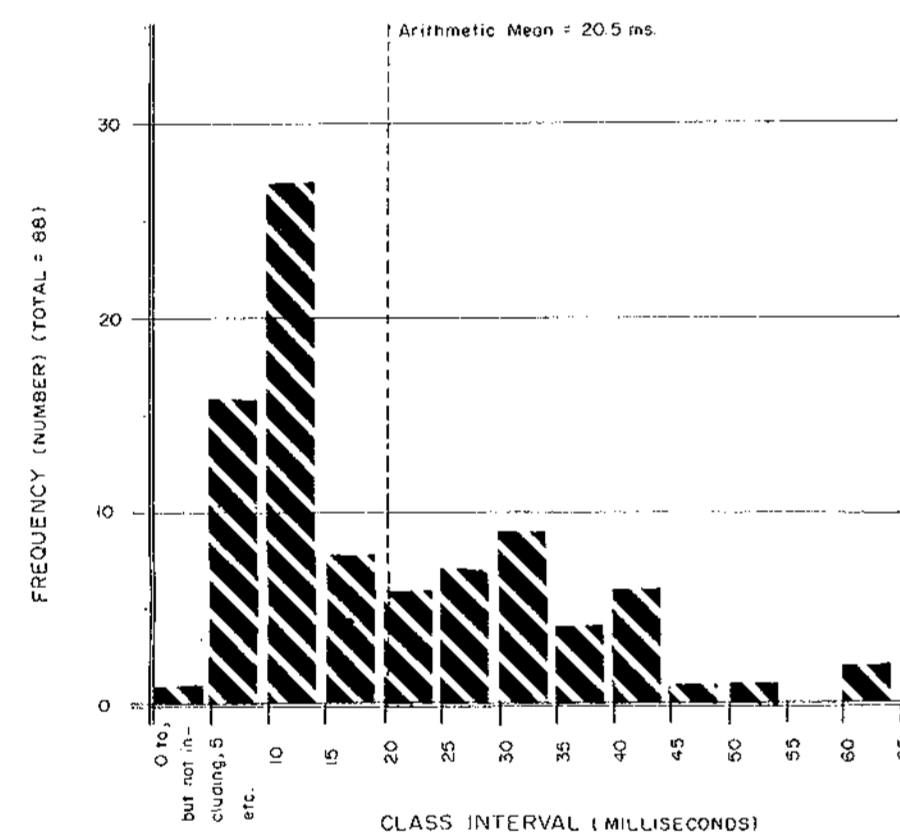


M. D. McInnis



4651-M4

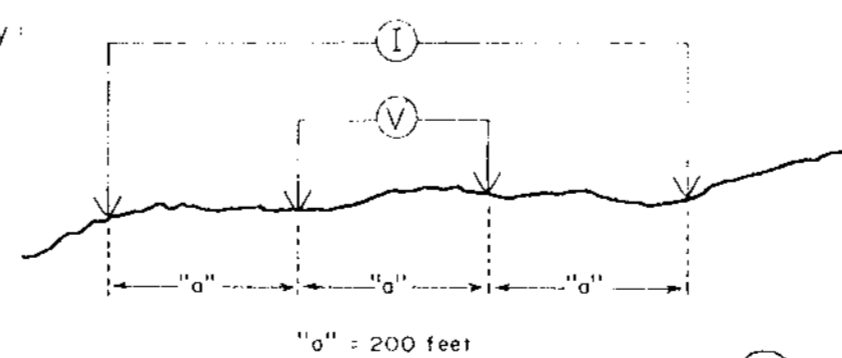
Relative Frequency Histogram



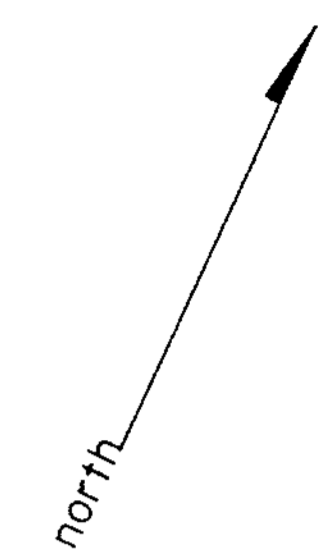
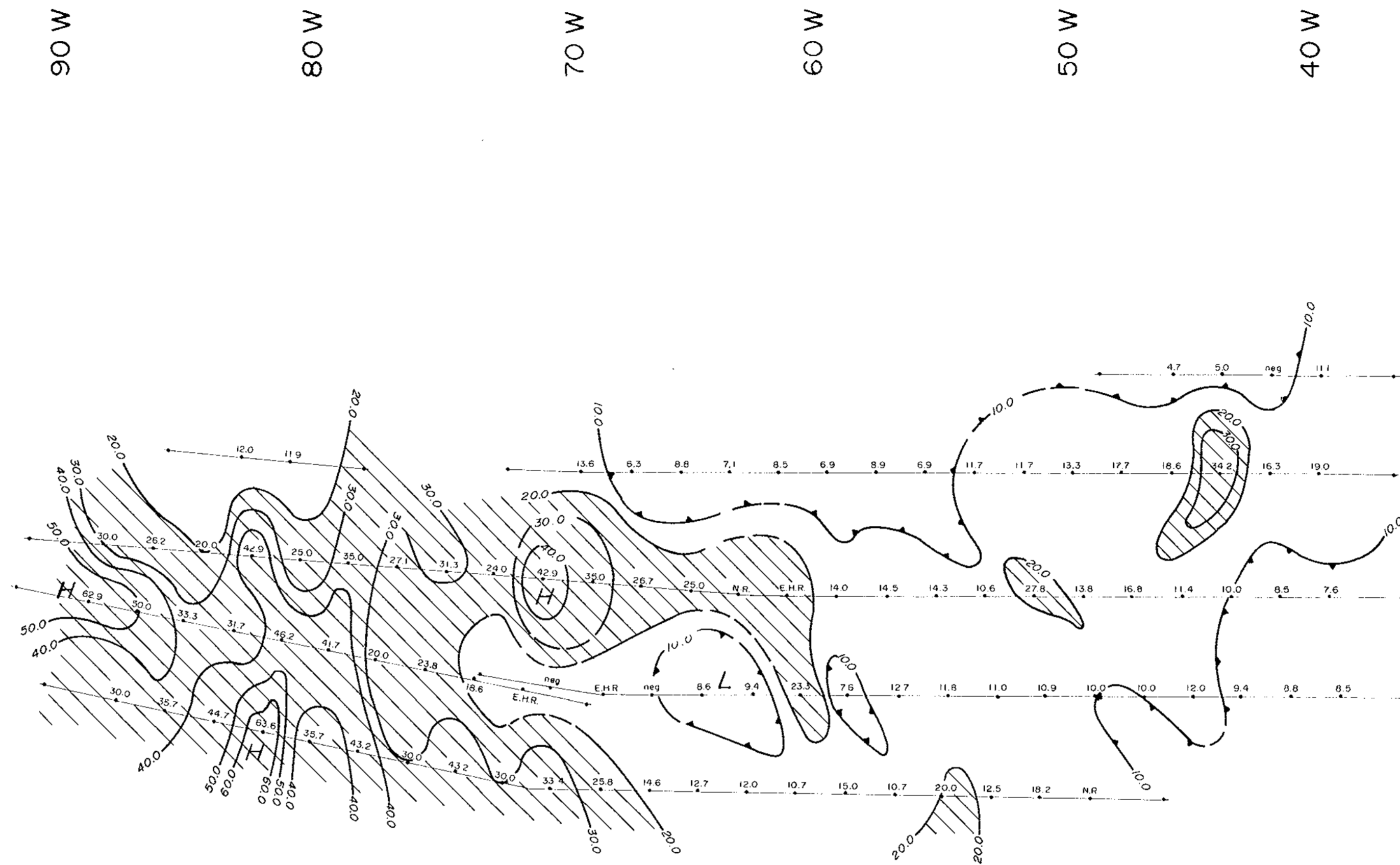
Legend: N.R. No reading
 E.H.R. Excessively high reading
 neg Negative reading
 Contour interval is 10 ms
 All readings in milliseconds (ms.)

Time Constants - HEWITT 200 I.P.: Current On = 2.0 seconds
 Delay = 0.4 seconds
 Integration Time = 1.2 seconds

Wenner Array:



M.D. McInnis



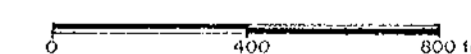
Great Plains Development of Canada, Limited

British Columbia
 Ball Creek - Iskut River Area

To accompany report by M.D. McInnis and R. Visagie on Ball Groups 1 & 2 Iskut River area, Liard Mining Div. dated August, 1973.

APPARENT CHARGEABILITY PLAN

Liard Mining Division - N.F.S. 104 G
 Scale: one inch equals 400 feet.
 Drawn by B.C.



To accompany a report by D.R. Cochrane, P.Eng., dated August 1, 1973.

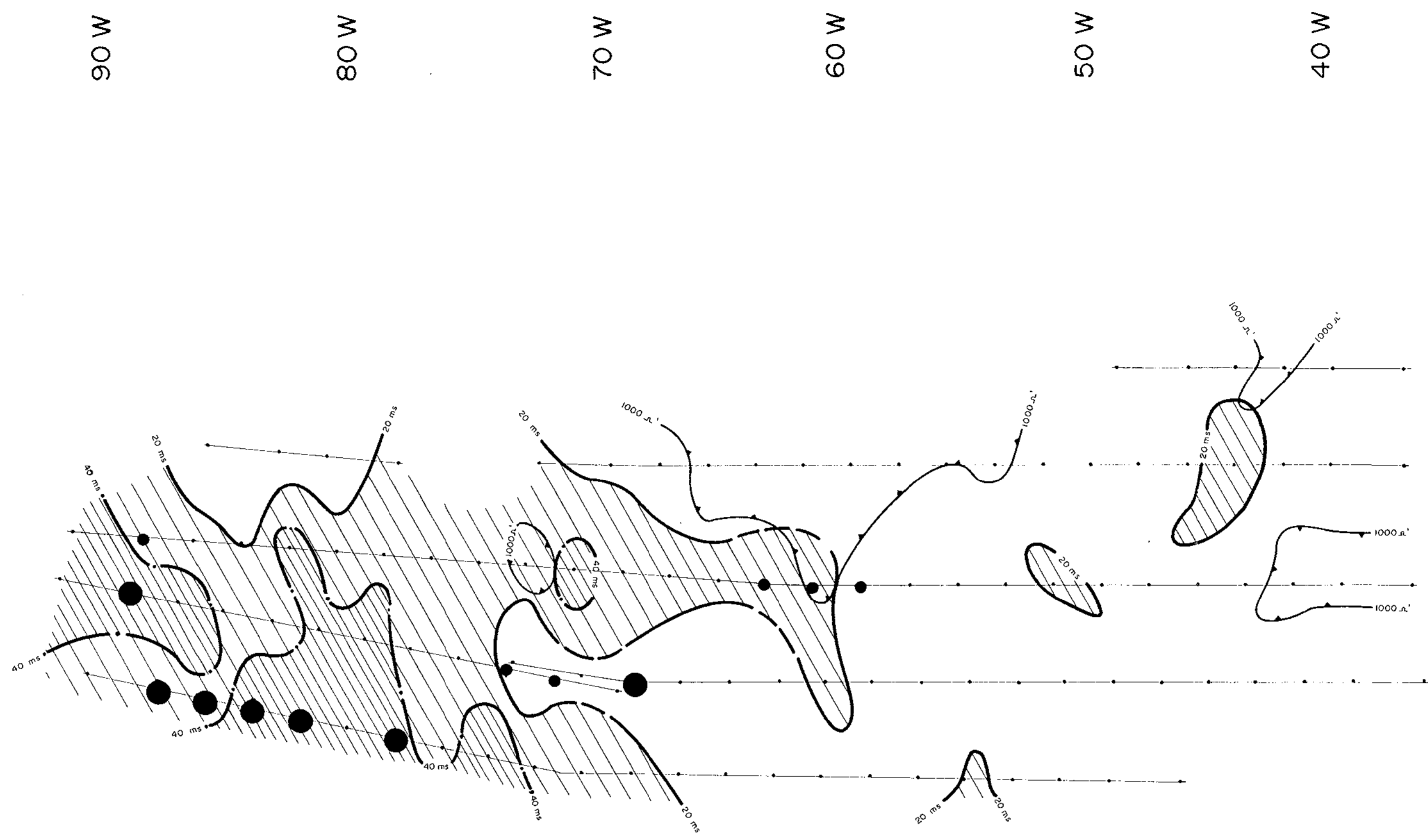
Plate no. 5



Cochrane Consultants Limited
 1812 Delta Street Delta B.C.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4651 MAP #5

4651-M5

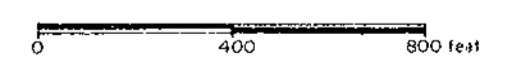


To accompany report by M.D. McInnis and R. Visagie on Ball Groups 1 & 2 Iskut River area, Liard Mining Div. dated August, 1973.

Great Plains Development of Canada, Limited
 British Columbia
 Ball Creek - Iskut River Area

COMPILATION PLAN

Liard Mining Division - N.T.S. 104 G
 Scale: one inch equals 400 feet
 Drawn by B.C.



To accompany a report by D.R. Cochrane, P.Eng., dated August 1, 1973

Plate no. 6



Cochrane Consultants Limited
 4382 Delta Street Delta B.C.

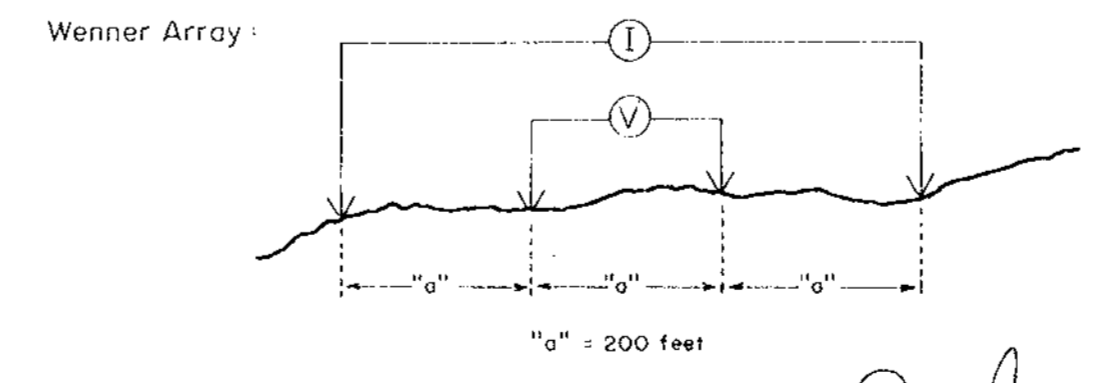
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4651 MAP #6

Legend: Anomalous Gradient Self Potential in millivolts per 200 feet (mv/200'): ● 50 to 100 mv/200' ● greater than 100 mv/200'

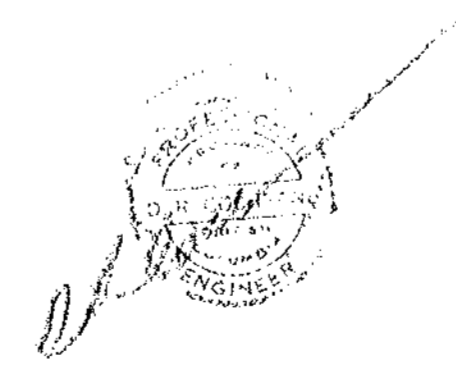
Anomalous Apparent Resistivity in ohm-feet (Ω·ft): less than 1000 Ω·ft

Anomalous Apparent Chargeability in milliseconds (ms): 20 ms
 greater than 20 ms but less than 40 ms
 40 ms
 greater than 40 ms

Time Constants - HEWITT 200 I.P.: Current On = 2.0 seconds
 Delay = 0.4 seconds
 Integration Time = 1.2 seconds



M. D. McInnis



4651-M6



DEVELOPMENT COMPANY
OF CANADA, LTD.

BRITISH COLUMBIA

BALL CREEK PROPERTY

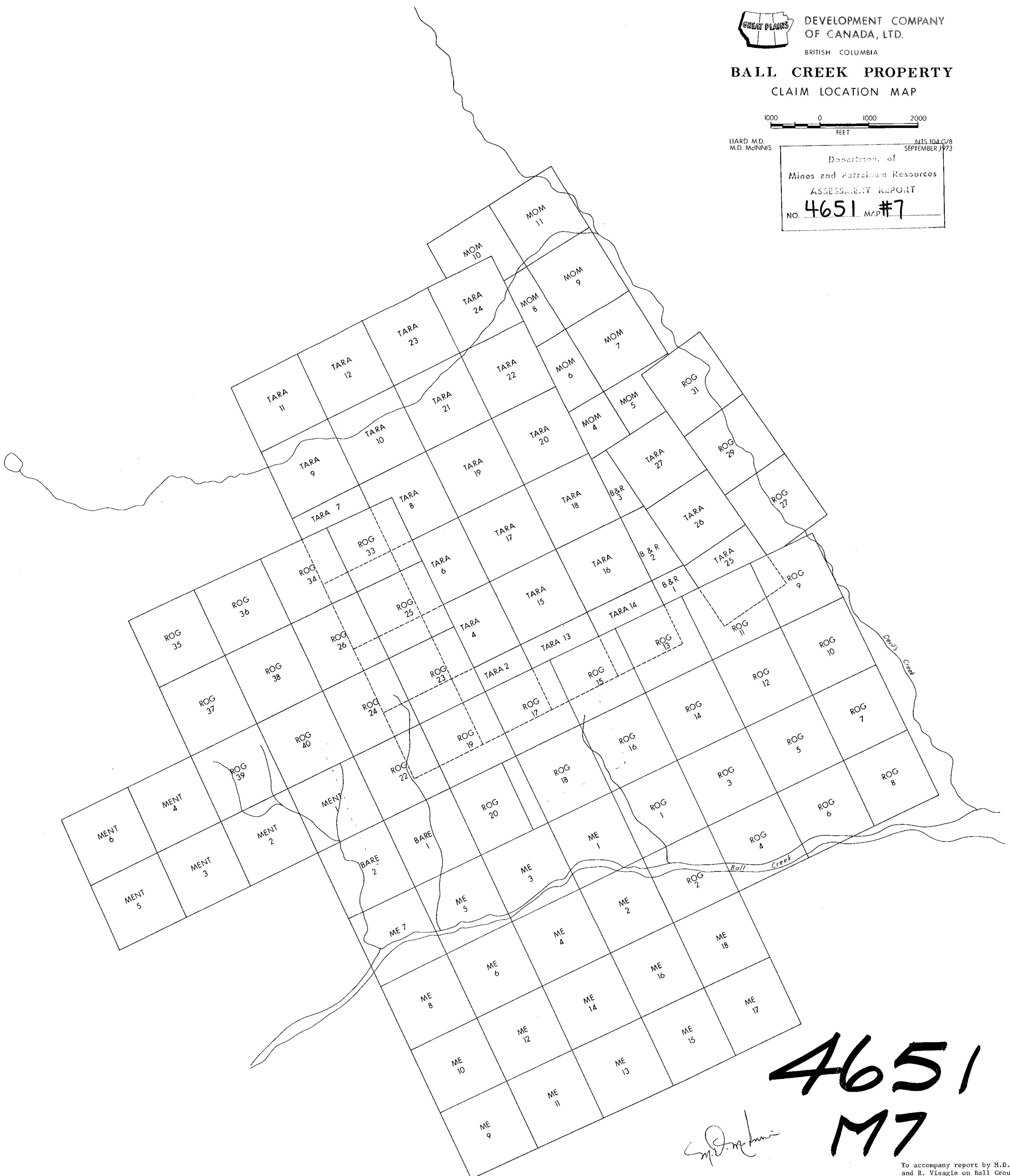
CLAIM LOCATION MAP



LIARD M.D.
M.D. McINNIS

NIS 104/G/8
SEPTEMBER 1973

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **4651** MAP #7



4651
M7

To accompany report by M.D. McInnis and R. Visagie on Ball Groups 1 & 2 Iskut River area, Liard Mining Div. dated August, 1973.