

COMINCO LTD.

EXPLORATION

WESTERN CANADA

NTS: 104-G

SUB-RECORDER	
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M.R. #	\$
VANCOUVER, B.C.	

REPORT ON

HORIZONTAL LOOP ELECTROMAGNETIC SURVEY

FORE GRID

FORE-MORE GROUP

LIARD MINING DIVISION, B.C.

ASSESSMENT REPORT

Latitude : 57°0'W

Longitude : 130°55'N

Claims Covered : FORE 2 and 3

Owned By : COMINCO LTD.

Survey Executed : September 27 to October 7, 1988

FILMED

REGIONAL BRANCH  
ASSESSMENT REPORT

18-103

OCTOBER 1988

LOG NO: 1212	RD.
ACTION:	

J. KLEIN

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**FORE MORE GROUP**

Liard M.D., B.C.



NTS  
104-G

Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

**PROPERTY LOCATION MAP**



Scale: 1: 250,000

Date: October 1988

Figure: 1

## COMINCO LTD.

EXPLORATION

WESTERN CANADA

NTS: 104-6

REPORT ON  
HORIZONTAL LOOP ELECTROMAGNETIC SURVEY  
FORE GRID  
FORE-MORE GROUP  
LIARD MINING DIVISION, B.C.

ASSESSMENT REPORT

INTRODUCTION

A small Horizontal Loop Electromagnetic (HLEM) survey was conducted over a grid on the Fore 2 and 3 claims, FORE-MORE group, Liard Mining Division. The objective of the survey was to trace the source of massive sulphide boulders discovered at the toe of a glacier. This report describes the survey and results obtained.

LOCATION AND ACCESS

The FORE-MORE property is located in the Boundary Range of the Coast Mountains, some 100 kms SSE of Telegraph Creek. It can be reached from Smithers by fixed wing aircraft to the Forrest Kerr Creek strip and from there by helicopter, a distance of 10 kms. The nearest road is the Highway at Bob Quinn Lake, some 40 kms to the east. The grid is at an elevation of 3,500-4,000'. The immediate area is open and comprises moraine, glaciers and barren rocks. The geophysical crew, also employed to lay out the grid, worked out of a camp owned by Pamicon Developments Ltd. of Vancouver and located near the Forrest Kerr creek strip. The crew used a helicopter for daily travel to the grid.

HLEM SURVEYING

An Apex Parametrics Ltd. MaxMin I Horizontal Loop Electromagnetic system was used. Frequencies of 220, 1,760, 7,040 and 14,080 Hz were employed. The system had an internal offset of -25% OP for the 220 Hz. This was taken into account when plotting the results. Data collected with the 100 m cable along Lines 4W and 5W appeared erratic, most likely due to a cable short, and was rejected. Most data was collected using a 100 m c.s. with lesser amounts with the 50 and 150 m c.s. The bubble levels on the MaxMin system were used in flat terrain with the inclinometers for slopy portions. In 95% of the measurements, transmitter and receiver operator were in plain

view of each other. The crew spent 8 mandays installing the grid employing a Silva Ranger compass and hip chain. The baseline consists of 2" x 1" pickets at 50 m intervals. All cross lines were installed from the base line and marked with cedar slats every 50 m. The baseline is oriented N115°E (true).

A total of 14.2 kms. of EM data was collected.

### PRESENTATION OF DATA

The data is presented as follows:

- |                       |  |
|-----------------------|--|
| Plate 350-88-1        | Grid and Claim Map<br>on a scale of 1:5,000  |
| Plates 350-88-2,3 & 4 | HLEM Profiles on a horizontal scale<br>of 1:5,000 and a vertical scale of<br>1 cm = 20% IP and OP for the 50, 100<br>and 150 m c.s. respectively |

The 7,040 and 14,080 Hz IP components are also shown with the 220 Hz IP component subtracted.

### DESCRIPTION OF RESULTS

The property is underlain by volcanics and sediments of Permian to Triassic age. Boulders along the north side and near the toe of a glacier contain interesting base metal values. This HLEM survey was aimed at searching for the source of these boulders. Varying coil separations were used to enable penetration through unknown thicknesses of moraine and glacier. Outcrops are present near the north side of the grid lines. The thickness of moraine and ice in this area wasn't considered prohibitive for HLEM surveying.

The 50 m c.s. results show slightly positive OP results towards the southern end of the lines and weakly negative OP values along the northern part. These smoothly varying values indicate that electrically speaking, different materials are present, e.g., moraine versus bedrock. These values (-4 to +2%) have no significance. The IP values are in the -5 to -9% range for all frequencies indicating that they are most likely caused by a constant cable offset.

The 100 m c.s. results show near zero OP for the low frequency (220 Hz) and weakly negative and positive values for the higher frequencies. The 14,080 Hz also shows some "activity" in the IP data not related to long or short cable effects. These variations are, however, of no significance.

The 150 m c.s. data shows a weak conductive trend from Line 14W - 5+50S to Line 8W - 2+00S. This trend is open to the west and east. (It is not clear

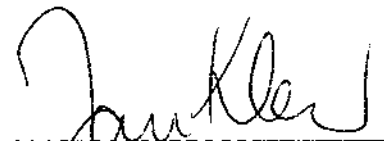
if it cuts across Line 6W at 1+00S. This uncertainty is related to a noisy reading.) This very weak, insignificant conductor has a positive shoulder towards the south; it correlates with the edge of outcropping bedrock and most likely reflects the base of the moraine.

### CONCLUSIONS AND RECOMMENDATIONS


A small HLEM survey was conducted over a portion of the FORE grid to trace the source of massive sulphide boulders near the toe of a glacier. No conductor of significance was detected.

It is recommended to continue the survey towards the west.

Respectfully  
submitted by:

  
\_\_\_\_\_  
J. Klein  
Chief Geophysicist

Endorsed for  
Release:

  
\_\_\_\_\_  
W. J. Wolfe  
Manager - Exploration  
Western Canada

### Distribution:

Mining Recorder	(2)
Administration	(1)
Western District Files	(1)
A.B. Mawer	(1)
Geophysics Files	(1)

A P P E N D I X I

IN THE MATTER OF THE B.C. MINERAL ACT  
AND IN THE MATTER OF A GEOPHYSICAL PROGRAMME  
CARRIED OUT ON THE FORE 2 & 3 CLAIMS, FORE-MORE GROUP  
LOCATED 100 KM SSE OF TELEGRAPH CREEK, B.C.

IN THE LIARD MINING DIVISION OF THE  
PROVINCE OF BRITISH COLUMBIA, MORE PARTICULARLY

N.T.S. 104-G

A F F I D A V I T

I, JAN KLEIN, of the Municipality of Burnaby in the Province of British Columbia, make oath and say:

1. THAT I am employed as a geophysicist by Cominco Ltd. and, as such, have a personal knowledge of the facts to which I hereinafter depose;
2. THAT annexed hereto and marked as "Exhibit A" to this statement is a true copy of expenditures incurred on a geophysical survey on the Fore 2 & 3 Claims, Fore-More Group;
3. THAT the said expenditures were incurred between Sept. 23 and Oct. 11, 1988, for the purpose of mineral exploration of the above-noted claims.



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J. Klein, P.Eng.  
Chief Geophysicist, Cominco Ltd.

A P P E N D I X II

E X H I B I T "A"

STATEMENT OF GEOPHYSICAL EXPENDITURES (1988)

FORE 2 & 3 CLAIMS, FORE-MORE GROUP

For Grid Preparation and Geophysical Surveying

1.	Geophysical Services by Maple Services	7,999.45
2.	Linecutting Supplies	345.06
3.	Airfares for Maple Services	1,252.80
4.	Fixed Wing Aircraft Smithers to Forrest Kerr	2,137.00
5.	Helicopter Services to Grid	2,871.53
6.	HLEM Equipment Rental from S J V Consultants Ltd.	2,188.00
7.	Camp Costs by Pamicon Developments Ltd.	3,045.00
8.	Camp Mob. and Equipment	1,220.00
9.	Radio Rental, 6 days @ \$25/day	150.00
10.	Base Map Preparation	142.55
11.	J. Klein, Supervision & Reporting 3 days @ \$375/day	1,125.00
12.	A.B. Mawer, Field Supervision 5 days @ \$392.30/day	1,961.50
13.	A.B. Mawer, Field Expenses	459.72
	Total Expenditures	<u>\$ 24,897.61</u>

I certify this to be a true Statement of Expenditures for the geophysical program on the FORE-MORE claims in 1988.

  
\_\_\_\_\_  
J. Klein  
Chief Geophysicist, Cominco Ltd.




A P P E N D I X III

CERTIFICATE OF QUALIFICATIONS

I, JAN KLEIN, of 7025 Dunblane Ave., in the Municipality of Burnaby, in the Province of British Columbia, do hereby certify:

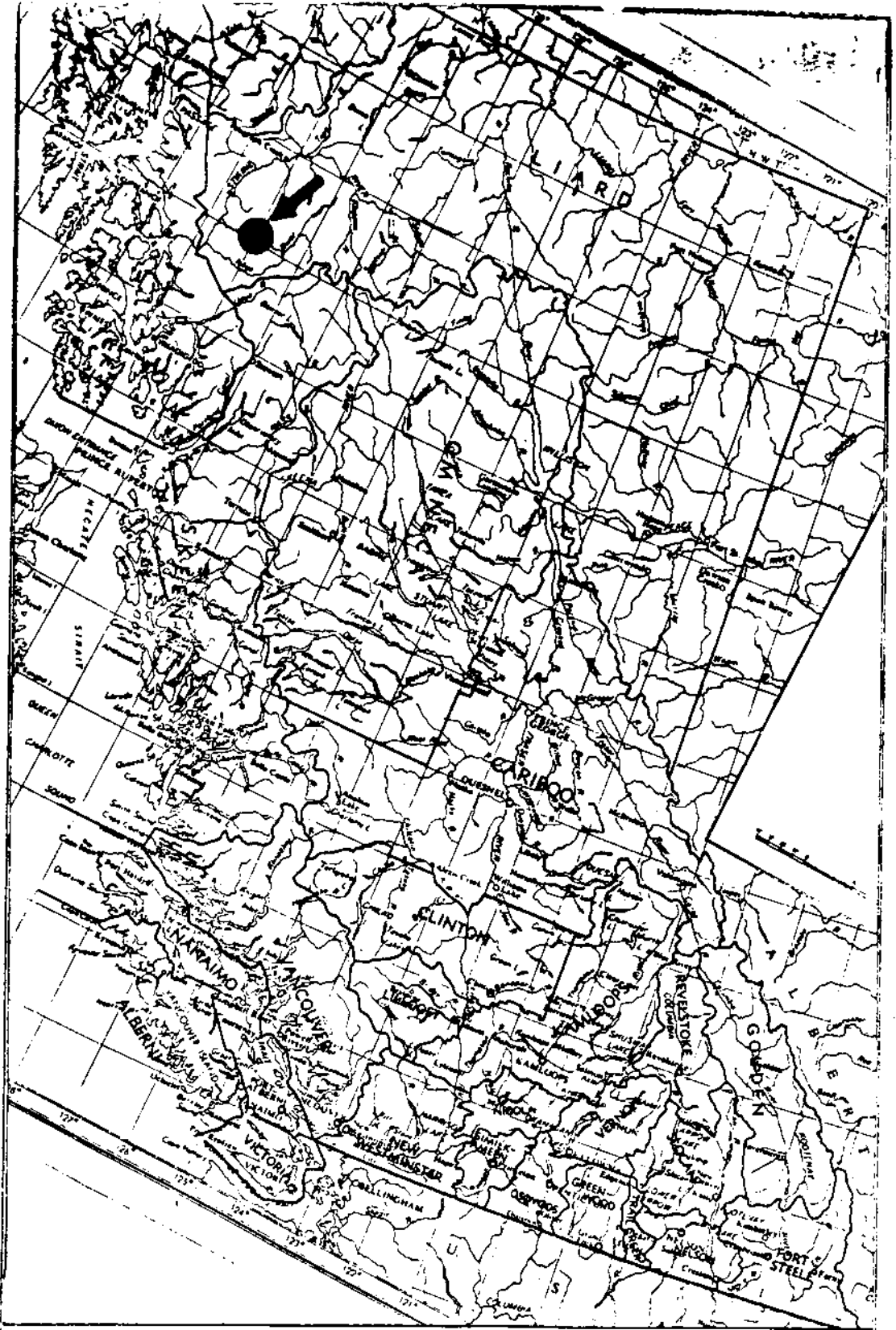
1. THAT I graduated from the Technological University of Delft, Netherlands in 1965 with a M.Sc. in Geophysics;
2. THAT I am a member of the Association of Professional Engineers of the Province of British Columbia, the Society of Exploration Geophysicists of America, and the British Columbia Geophysical Society;
3. THAT I have been practising my profession for the past twenty-three years.
4. THAT I have been employed by Cominco Ltd. since 1974.




---

J. Klein, P.Eng.  
Chief Geophysicist, Cominco Ltd.

Dated this 9<sup>th</sup> day of November, 1988  
at Vancouver, British Columbia



Drawn by:	Traced by:
Revised by	Date
Revised by	Date

  
**LOCATION MAP**  
**FOREMORE GROUP**

Scale: *1 inch = 24 miles*     Date:     Plate: **1**

ASSESSMENT REPORT  
FOREMORE GROUP

## 1. INTRODUCTION

This report outlines preliminary development work on the Foremore Group of 19 claims (460 units) situated within the Liard Mining Division of B.C.

During 1988 the exploration program consisted of prospecting, geological mapping, rock and boulder sampling and contour soil sampling, performed by Cominco Ltd.

## 2. SUMMARY

In late fall of 1987 geological reconnaissance by helicopter in the headwaters of the south branch of More Creek located abundant boulders of magnetite, hematite, pyrite, with or without iron-carbonate in a terminal moraine on the south edge of More Glacier. In addition a few boulders of vein quartz mineralized with sphalerite, chalcopyrite and galena were noted. On the north side of More Glacier a few boulders of vein quartz with variable amounts of sphalerite, galena, chalcopyrite were sampled and analyzed, one of these returned the geochemical value of 140,000 ppb Au (later confirmed by fire assay as 5.2 oz/t Au). The Foremore Group of eight claims were located to cover the most accessible areas. In June of 1988 seven full sized claims were added, and in September, 1988 eight full sized claims were staked to the east. The claim block now consists of 460 units and covers an area of approximate size of 18 km east-west and 10 km north-south.

In July of 1988 prospecting and mapping located a swarm of quartz veins in granodiorite up-ice to the southeast of the gold bearing float found in 1987 (More 3 and 4 claims). This showing was mapped and sampled with results of 1 to 9 g/t Au over variable widths of vein material mineralized with pyrite, sphalerite, galena and chalcopyrite.

Prospecting in the north edge of the south terminal and lateral moraine (on Fore 2 and 3 claims) has located several hundred boulders of very fine grained pyrite, barite and carbonate breccia with variable amounts of light grey sphalerite, minor galena and tetrahedrite. These boulders range in size from 10 cm diameter to 2 m diameter and can be located over a strike length of 1.5 km. The areal distribution of the boulders suggests that the source is to the northwest and under the ice. Within the boulder material textures range from very fine wispy laminations to medium banding to swirled fine wispy laminations and banding around limestone breccia, carbonated fragmental (volcanics?), siliceous fragments and tuffaceous material.

Sampling of sixty-nine boulders gave the following results of nil to trace Au, one to eight oz/t Ag, trace to 16% Zn, trace to 2.6% Pb, trace to 28% Ba and generally trace Cu. The numerical average of Ag, Pb, Zn gave the following results: 2.7 oz/t Ag, 0.7% Pb, 6.8% Zn.

Other boulders sampled in this area consisted of vein quartz or silicified volcanic breccia mineralized with pyrite, chalcopyrite and sphalerite. Analytical results indicated variable amounts of Au, Ag, Pb, Zn, Cu, Ba with only one boulder containing interesting gold values of 0.364 oz/t Au.

Only a few traverses were done in the southern portion of the south terminal and lateral moraine. Within this area there are abundant boulders of magnetite, hematite, iron carbonate with disseminated chalcopyrite, ranging in size from gravel to boulders three by four metres in diameter. Sampling on portions of a few boulders gave 0.1% Cu to 1.7% Cu with traces of other metals. In addition there are numerous boulders of pyrite with textures ranging from coarse, granular to very fine grained and laminated, a few boulders sampled in 1987 gave only trace amounts of metals other than iron.

There are also a few boulders of vein quartz, with chalcopyrite, grey sphalerite and pyrite, sampling in 1987 gave 1 g/t Au, 16 g/t Ag, 0.1% Pb, 6% Zn, 5% Cu.

To the west on Fore 10-11 on the exposed edge of a nunatak are outcrops of skarny impure limestone, nearby are located two large blocks of skarny limestone with 24% Zn as disseminations and blebby stringers.

To the east on Fore 18 and located in moraine below the ice are numerous blocks of epidote-tremolite skarn and brecciated dark green andesite heavily mineralized with pyrrhotite, pyrite, magnetite, chalcopyrite and sphalerite. Assaying of pieces 23 blocks gave PT nil, Au nil, Ag trace to 20 g/t, trace Pb, trace to 18% Zn, trace to 2.8% Cu, Ni nil, Co trace to 246 ppm.

In late September a limited program of HLEM was conducted in the area of the pyrite-sphalerite boulders and continued north to the edge of the glacier. Poor weather and the closing of camp facilities at Pamicon's camp at Forrest Kerr limited the field days to five. This survey did not detect any strong E.M. conductors in the area tested, for full details see Geophysical Report by J. Klein, 1988.

On the eastern edge of More 3 and Fore 11 two soil lines were run. Samples were taken at 25 m spacings and along the contour of the slope. One possible Au, Ag, Pb, Zn anomaly is noted near the western edge of the lines.

The preliminary program on the Foremore property has located interesting gold quartz vein mineralizations in place, extensive boulder fields of pyrite, barite, sphalerite, magnetite, hematite, with chalcopyrite and two magnetite-pyrrhotite skarn areas of good grade copper-zinc. It is recommended that a program of detailed geological mapping, prospecting and sampling be carried out. In addition geophysical programs should be done in the possible source areas of the sulphide and oxide boulder float.

It is also recommended that a glacialogical study be carried out by a qualified glacialogist to help in determining the probable source of the mineralized boulders.

### 3. PROPERTY

The Foremore Group comprises 460 units in 19 contiguous claims located by perimeter staking.

<u>Claims</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Recorded</u>	<u>Assessment Work Due</u>
More 1	20	4400	87/12/01	88/12/01
2	20	4401	"	"
3	20	4402	"	"
4	20	4403	"	"
Fore 1	20	4404	"	"
2	20	4405	"	"
3	20	4406	"	"
4	20	4407	"	"
5	20	4604	88/06/03	89/06/03
6	20	4605	"	"
7	20	4606	"	"
8	20	4607	"	"
9	20	4608	"	"
10	20	4609	"	"
11	20	4610	"	"
12	20	5349	Sept. 25/88	Sept. 25/89
13	20	5350	"	"
14	20	5351	"	"
15	20	5352	"	"
16	20	5353	Sept. 26/88	Sept. 26/89
17	20	5354	"	"
18	20	5355	"	"
19	20	5356	"	"

\*NOTE: Assessment credits for work reported herein and in the Geophysical Report shall extend these dates.

#### 4. OWNERSHIP

The Foremore Group of 19 claims (460 units) is 100% owned by Cominco Ltd., 700-409 Granville Street, Vancouver, B.C. V6C 1T2.

#### 5. LOCATION AND ACCESS

The Foremore Group is located within the Liard Mining Division on map sheets 104G/2 and 104G/3 at latitude 57°02'N and longitude 130°54'W to 131°02'W. The claims are situated over a divide area covering headwaters of easterly and southerly flowing branches of More Creek. More Creek is a very large stream that drains easterly into the Iskut River at a point approximately 10 km west-northwest of Bob Quin on Hwy 37. The area is above timberline and is 50% covered by glaciers or permanent snowfields, a small amount of scrub timber is noted on the gravel flats near the headwaters of the west branch of More Creek. Access to the property is by helicopter from air strips at Bronson Creek (45 km), Forrest Kerr (13 km) and emergency strips at Bob Quin (40 km) and Burrage (50 km). During the present program access was by helicopter on a daily basis from Cominco's camp at Bronson Creek.

#### 6. HISTORY AND DEVELOPMENT

In September of 1987 helicopter reconnaissance in the headwaters of a south flowing and a westerly flowing branch of More Creek located mineralized boulders in terminal and lateral glacial moraines.

In the northern area the boulders of interest consisted mainly of vein quartz with variable amounts of sphalerite, galena and chalcopyrite. To the south the boulders were mainly massive magnetite, hematite and iron carbonate with chalcopyrite and a few boulders of coarse granular to very fine grained laminated pyrite.

In December the Foremore Group of eight claims were located over these occurrences and in June of 1988 seven additional claims were added to fill in the area between the two claim blocks.

In July preliminary programs of geological mapping, prospecting and sampling were done in the area of the gold bearing quartz float and the south boulder areas. The results of these programs located the probable source of the gold bearing quartz veins, and located an extensive field of pyrite-barite, silver, zinc, lead bearing sulphide boulders. An additional eight claims were added to the east to cover areas of mineralized float.

In late September a limited program of ground geophysics (HLEM) was attempted in the south boulder field but this program was curtailed due to the closing of camp facilities at Pamicon's Forrest Kerr camp.

## 7. GEOLOGY (████████████████████)

### 1. Regional

The Stikine assemblage in the western Mess Creek area consists of variably altered, deformed, metamorphosed and mineralized schists, phyllites, limestones and greenstones. Original lithologies were mafic pyroclastics and epiclastics, felsic volcanic breccias and tuffs, carbonaceous sediments and gabbroic sills (P.M. Holbeck-1988; paper presented at Smithers Conference).

This assemblage with some minor local variations probably extends southward into the More Creek and Upper Forrest Kerr Creek areas.

The Hickman batholith of Triassic-Jurassic age occurs to the north, and locally a few smaller plutons of quartz monzonite-granodiorite were noted.

Structurally the formations generally trend northwesterly with open folds trending west-southwesterly and numerous northwesterly trending faults of unknown magnitude transect the area.

### 2. Property (██)

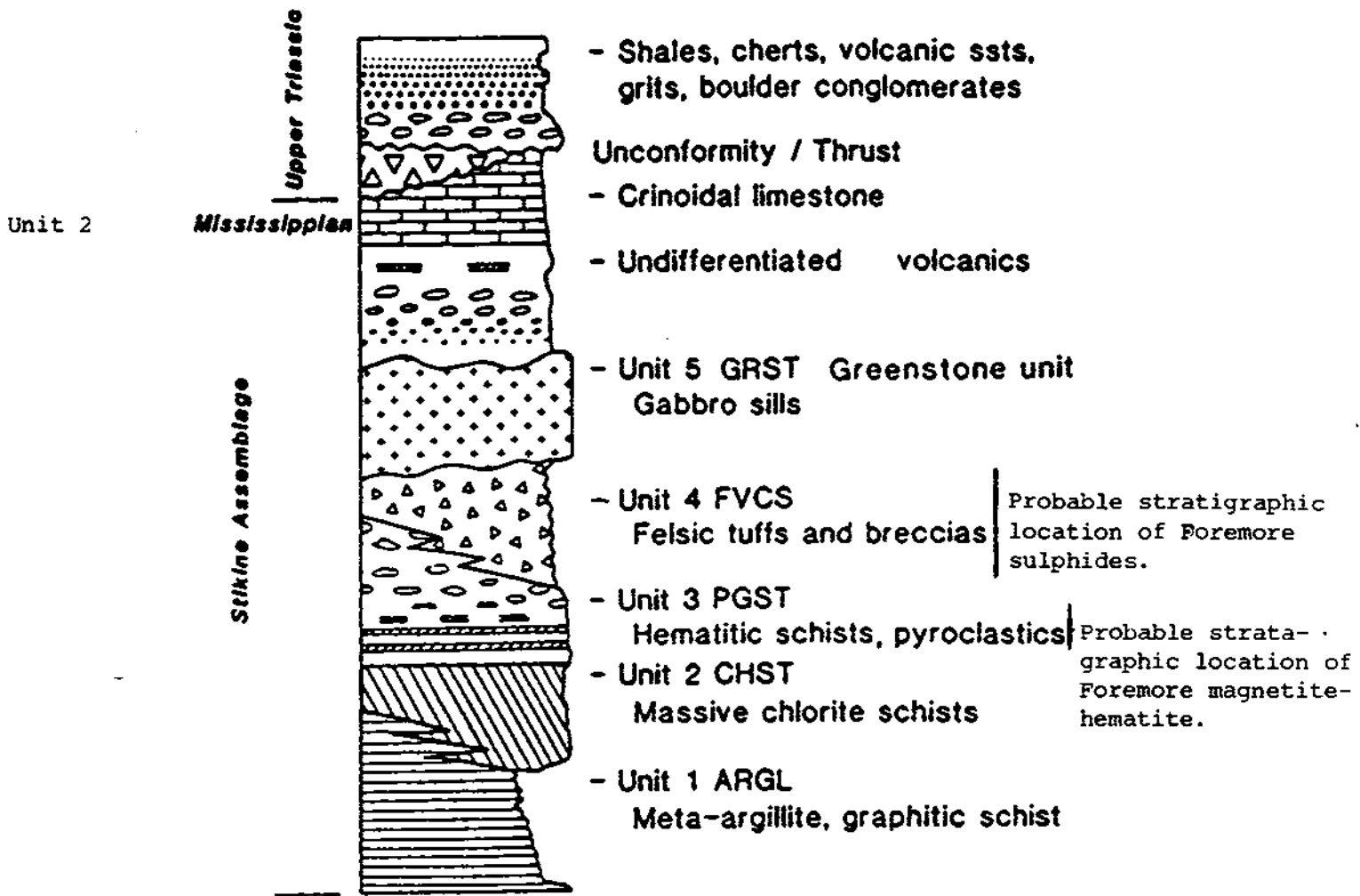
Preliminary mapping indicates that the property is underlain by a sequence of foliated felsic volcanic breccias and tuffs, greenstones (andesite fragmentals), limestone breccia or sharpstone conglomerate, hematite schists and pyroclastics. This sequence is overlain by a thick section of massive bedded dark green andesite in turn overlain by undifferentiated volcanics and a thick limestone. The rock units generally trend northwesterly with moderate to steep dips to the southwest.

#### 2(a) Stratigraphy (Refer to Figure 1)

The present level of field work was too limited to establish a stratigraphic column but indications are that the stratigraphy in the claim area is somewhat similar to that established by P.M. Holbeck in Upper Mess Creek approximately 10 m northerly. (Geology and Mineralization of the Stikine Assemblage Mess Creek Northwestern B.C. - paper presented at the Smithers Conference October, 1988).

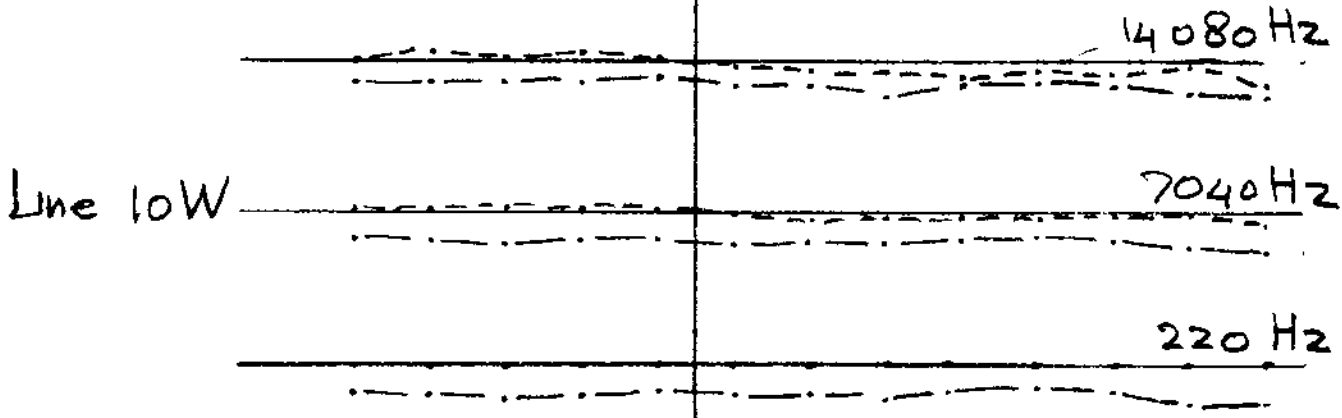
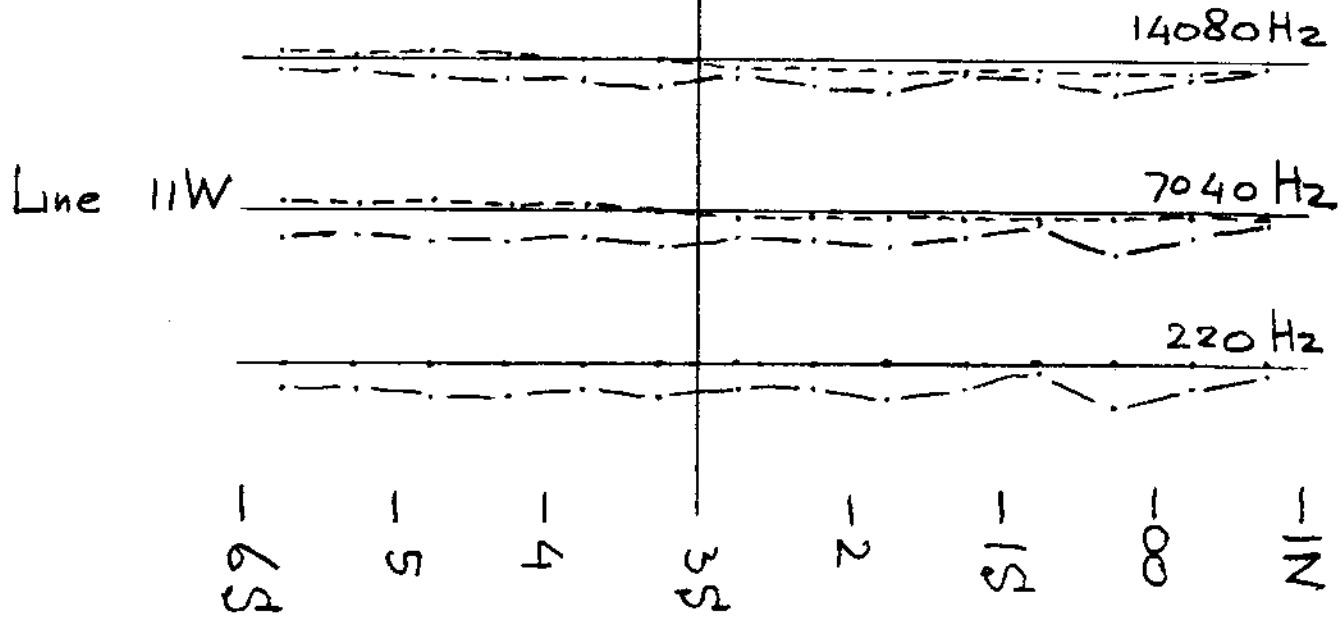
#### 2(b) Structure

The property covers an area transected by numerous northwesterly trending faults, in addition some southwesterly striking, steep dipping fault zones were noted. The amount of movement or offset is unknown at this time. Possible southwest trending open folds is suggested by the position of outcrops of the Unit 1 Limestone within Unit 2 foliated rocks and massive andesitic volcanics.



Schematic stratigraphic column of Stikine Assemblage rocks,  
 Mess Creek area, northwestern B.C. - P.M. Holbeck - 1988





18-103

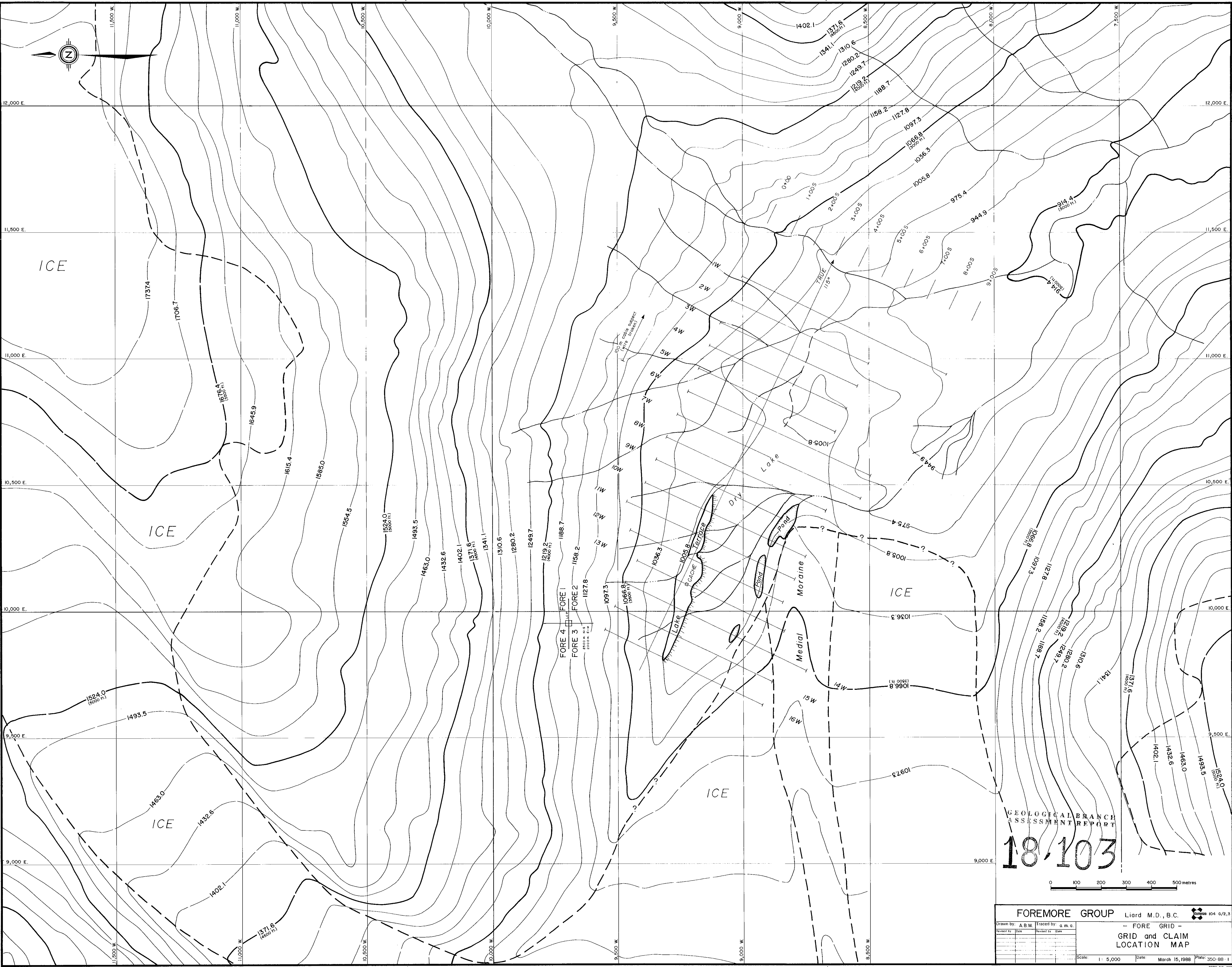
104G2

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Revised by	Date	Revised by	Date

FORE-MORE  
FORE GRID  
50 m HLEM

LIARD M.D.

Scale:                      Date: Oct 1988                      Plate: 350-88-2



ICE

ICE

ICE

ICE

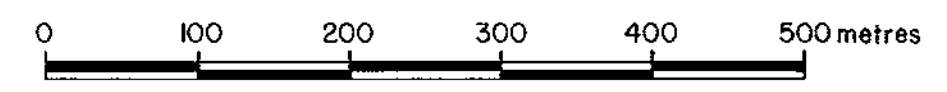
ICE

FORE 4  
FORE 3  
FORE 2  
FORE 1

Medial Moraine  
Lake  
Dry Lake  
Pond  
CACHE

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

18,103

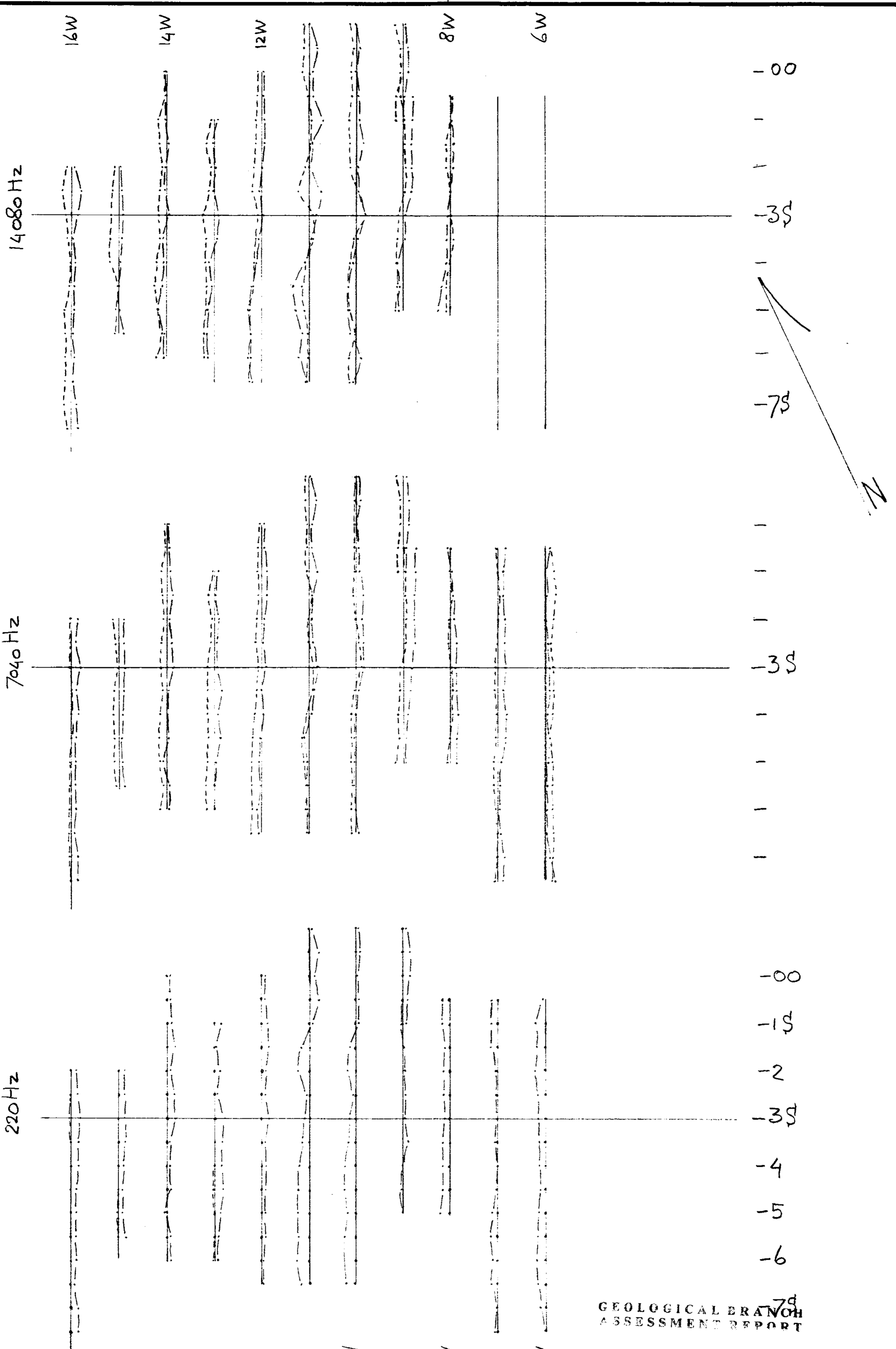


FOREMORE GROUP Liard M.D., B.C.

— FORE GRID —  
GRID and CLAIM  
LOCATION MAP

Drawn by: A.B.M.	Traced by: a.m.a.
Revised by: GAK	Revised by: GAK

Scale: 1: 5,000 Date: March 15, 1988 Plate: 350-88-1



14080 Hz

7040 Hz

220 Hz

16W

14W

12W

8W

6W

00

35

75

35

00

15

2

35

4

5

6

75

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

18-103  
200 m

16W

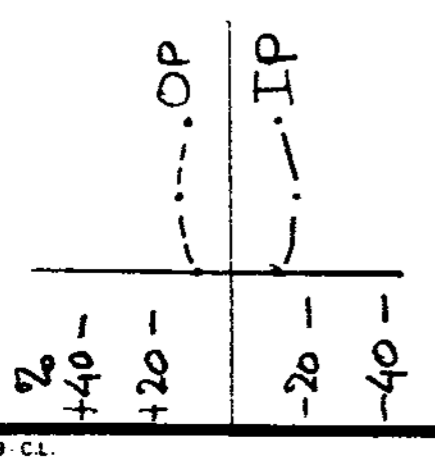
14W

12W

10W

8W

6W

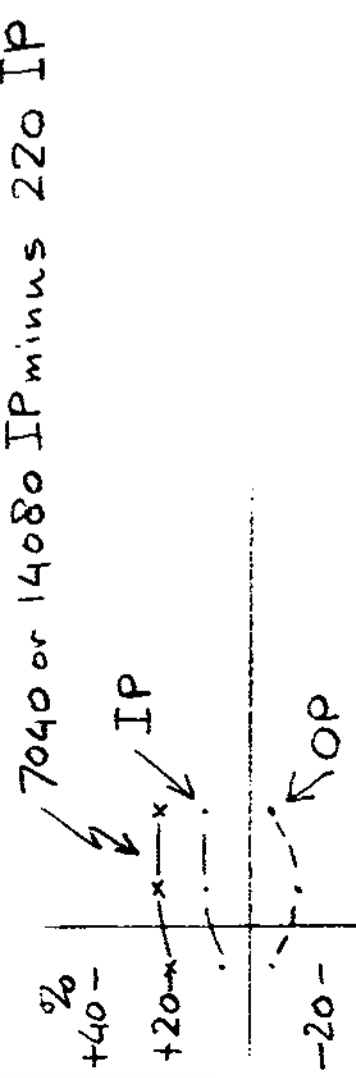
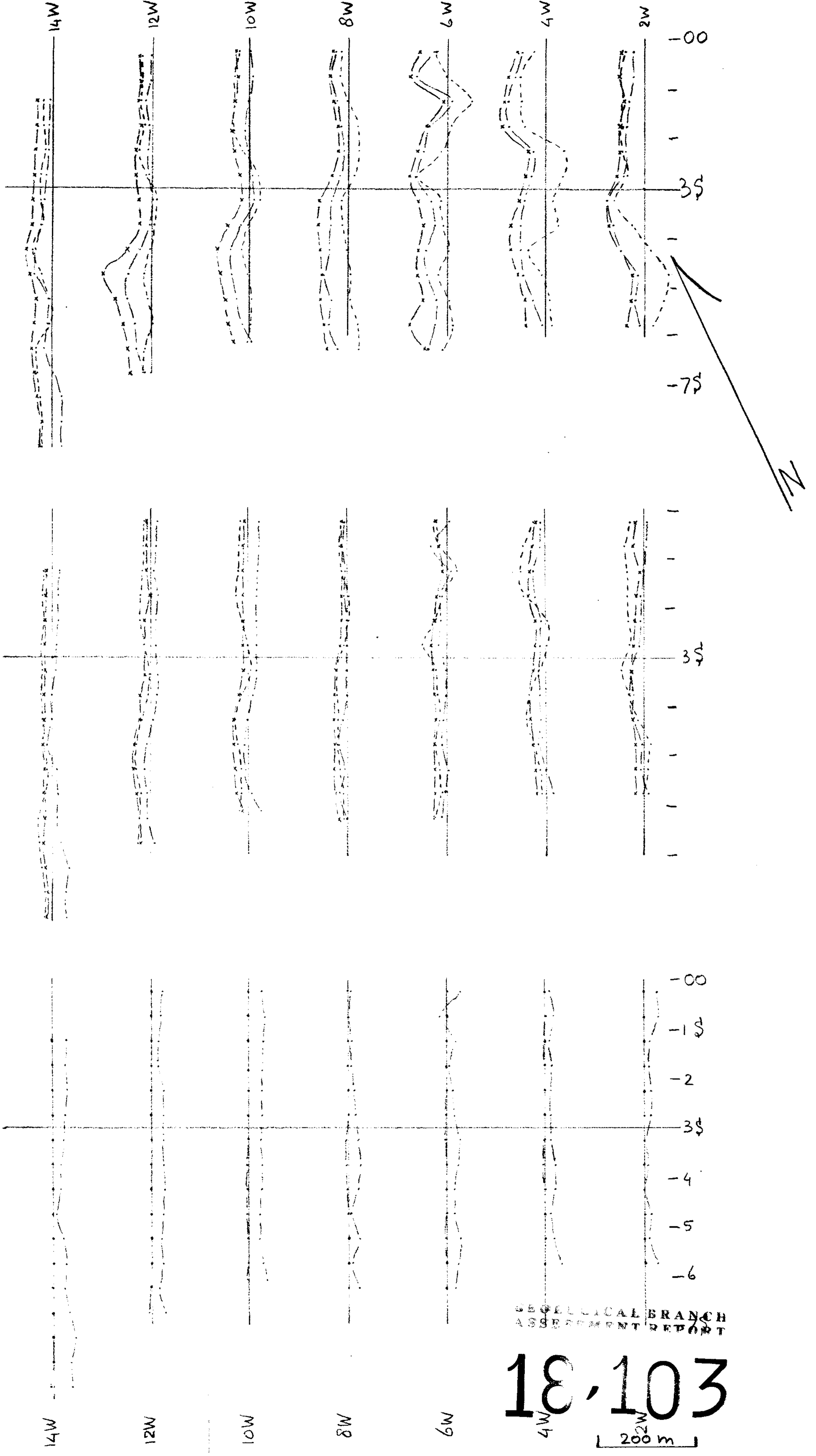


FORE-MORE (FORE GRID)				104 G2	
Drawn by:		Traced by:		HLEM Profils	
Revised by:		Revised by:		100 m c.s.	
Date:		Date:		LIARD M.D.	
Scale: 1:5,000		Date: Oct 88		Plate: 350-88-3	

14080 Hz

7040 Hz

220 Hz



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

# 18-103

200 m

## FORE-MORE (FORE GRID)

104 G2

Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

HLEM Profils  
150 m c.s.

LIARD M.D.

Scale: 1:5,000

Date: oct 88

Plate: 350-88-4