

2188

Assessment Report on Geophysical
(Induced Polarization) Survey of the
Laura Mines, WJ Claim Group,
(Quadrilateral 50N, 120W, 5E) Done for
Can West Investments, Ltd.

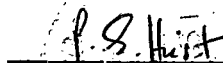
by

Keeva Vozoff
 Peter Hirst
 H. S. Lahman

12 August, 1969 through 10 October, 1969


 H. S. Lahman

12/2/69
 Date


 P. Hirst

Dec. 8, 1969
 Date

Geoscience Incorporated
 199 Bent Street
 Cambridge, Mass. 02141

November 1969

TABLE OF CONTENTS

	<u>Page No.</u>
I. OPERATIONS	1
II. DISCUSSION OF RESULTS	3
Reconnaissance Work	3
Detailed Work	4
Assessment	6
APPENDIX I	
APPENDIX II	
APPENDIX III	

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2188 MAP.....

TABLE OF ILLUSTRATIONS

MAPS

#1 Anomaly Location Map	-----	Pocket
#2 Apparent Frequency Effect	-----	Pocket
#3 Metal Conduction Factor	-----	Pocket
#4 Mineral Claim Map	-----	Pocket
#5 Location Map	-----	following Page 2
<i>1" = 4 miles</i>		

Assessment Report on Geophysical (Induced Polarization)
Survey of the Laura Mines, WJ Claim Group,
(Quadrilateral 50N, 120W, 5E) Done For
Can West Investments, Ltd.

I. OPERATIONS

Between 10 July and 4 October, 1969, Geoscience Incorporated undertook an induced polarization survey of the Laura Mines Ltd. claim group in the Highland Valley, B. C. The work was performed under contract to Can West Investments, Ltd. The survey was a reconnaissance survey with follow-up detail work. The objective was to locate possible ore zones on the property.

22.8 miles of reconnaissance data was obtained during the period 10 July through 12 August, 1969. Further detailed work (3.8 miles) was done between 23 September and 4 October. For all work the colinear dipole-dipole array was employed. For reconnaissance work the dipoles were 400 ft. in length and measurements were made at separations of 2 and 3. The detailed work employing 100 ft. dipoles (separations of $n = 2, 3, 4,$ and 5) was also done. The equipment employed was of standard frequency domain type. The current transmitter was a Geoscience model T2800 while the receiver was a Geoscience model 401.

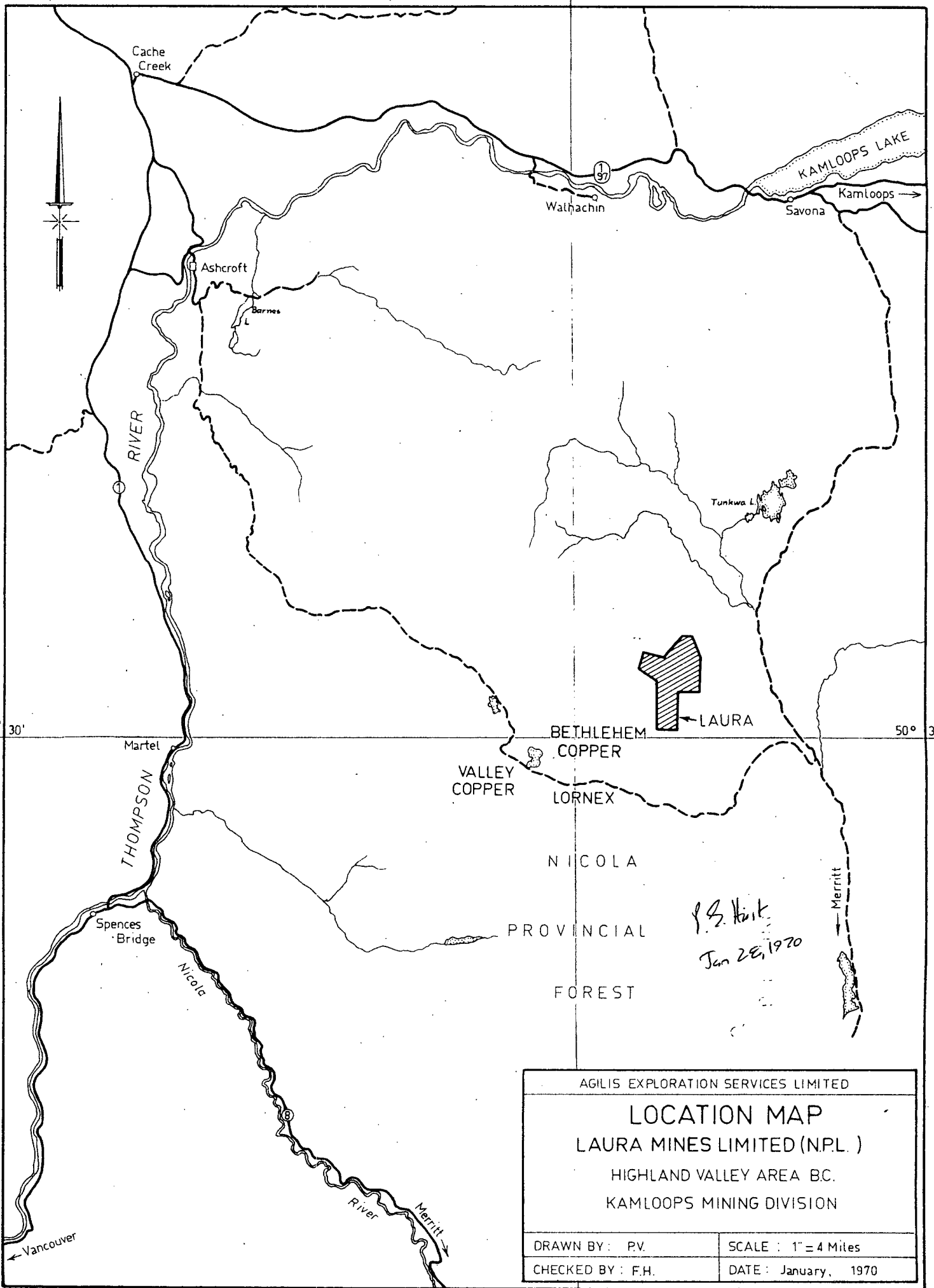
The field crew consisted of the following personnel:

Geoffrey Cole, party chief

George Ryan, geophysical operator

3 local laborers.

121° 00'



50° 30'

50° 30'

*P.S. Hart
Jan 28, 1970*

AGILIS EXPLORATION SERVICES LIMITED	
LOCATION MAP LAURA MINES LIMITED (N.P.L.) HIGHLAND VALLEY AREA BC. KAMLOOPS MINING DIVISION	
DRAWN BY: PV.	SCALE: 1" = 4 Miles
CHECKED BY: F.H.	DATE: January, 1970

121° 00'

NTS. 92-1

Department of
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ASSESSMENT REPORT

NO. 2188 MAP #5

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2188 MAP #5

GEOFFREY COLE

Geophysicist

Geophysical Experience

Bureau of Mineral Resources Darwin, N. T.

December 1961 - April 1963

Geophysical Assistant (Darwin Uranium Group)

Duties - Assisting Government Geophysicists with all stages of geophysical surveys and interpretation including E.M., Self-Potential, Radiometric, Magnetic and Resistivity. Operation, maintenance and interpretation of results from the Darwin Seismic Observatory.
Radiometric assaying.
Radiometric logging of diamond drill holes.
Servicing and maintenance of geophysical equipment.

Western Mining Corporation Kalgoorlie, W. A.

April 1963 - May 1965

Geophysical Party Chief and later Assistant to Chief Geophysicist

Duties - Carrying out and interpreting results of I.P., and Magnetic surveys under varying climatic conditions from arid desert to heavy rainfall areas.
Aerial magnetic survey work near Perth, W. A.

Later - In charge three/four I.P. field parties and responsible for training of personnel, general organization plus maintenance of equipment.
Assisting Chief Geophysicist with interpretation of I.P. data and report writing etc.

Australian Geophysical Pty. Ltd. Sydney, N. S. W.

May 1965 - August 1968

Duties - Similar to those with Western Mining but with a greater degree of autonomy.
Complete I.P. projects carried out in difficult terrain in N. S. W. and under very dry conditions in the N. T. Also in W. A. and Victoria. Administered Calvert Hills project. Supervision of helicopter gravity survey. Lease selection in W. A.

GEORGE RYAN

Geophysical Technician

Geophysical Experience:

Geoscience, Inc. Cambridge, Mass.

1965 - present.

Duties - George Ryan has operated on various geophysical field crews: resistivity; magneto-tellurics; electromagnetics, ground magnetometers; and induced polarization. He has had field experience throughout the continental United States and the Ivory Coast. In addition to field responsibilities, he has both constructed and repaired geophysical equipment.

II. DISCUSSION OF RESULTS

Reconnaissance Work:

There were no strong anomalies encountered on the prospect. There were several anomalies of a very mild nature (PFE to background ratio of 2 or less). Our previous experience, literature search and conversations with operators in the Highland Valley indicates that small anomalies can be indicators of significant mineralization in this area. Therefore, some discussion of the mild anomalies encountered is warranted.

Three types of anomalies were encountered. The most important is the simultaneous occurrence of frequency effect and metal factor anomalies. Of lesser importance is the metal factor anomaly with very little change in frequency effect. Finally there are frequency effect anomalies with no corresponding metal factor anomaly. All three types are encountered on the prospect.

The background frequency effect on the Laura prospect appears to be about 0.5 to 0.9%. The background resistivities appear to be several hundred ohm-meters. The metal factor background is in the range 1.0 to 1.5. Any frequency effect in excess of 1.2% and any metal factor in excess of 2.2 are regarded as anomalous in this area.

The anomalies encountered on the prospect are summarized in Table I. They are arranged in order of apparent significance. Those at the top of the list should be investigated first. If they represent significant mineralization, then other anomalies may be investigated.

If they do not represent important mineralization, then the other anomalies may be ignored with considerable surety.

The justification of more work on such mild anomalies is two fold. In the first place, line 72N passes quite close to some trenching. Detail work on this line does not indicate any strong anomalies. However, there are several instances of frequency effects in the range 1.2 to 2% and metal factors of 2 to 6. This suggests that such small anomalies do represent mineralization in this area. In the second place, the anomalies encountered generally tend to track from line to line. In Figure 1 it is evident that there are three anomalous areas. These anomalies can be traced from line to line quite easily. Such consistency argues against instrument or operator errors.

It is evident from comparing Table I and Figure 1 that the most promising area for further investigation is along the lines in Zone 1. These lines are characterized by coincidental frequency effect and metal factor anomalies. The lines in Zone 2 also have coincident anomalies, but they are markedly weaker than those in Zone 1. The lines in Zone 3 are the least promising since they are predominantly metal factor anomalies without attendant frequency effect anomalies. This last group reflects a resistivity decrease and probably is associated with a change in rock type rather than an increase in mineralization.

Detailed Work:

Comparison of the reconnaissance (400 ft. dipole) data with the detail (100 ft. dipole) data on line 72N (see appendix) illustrates one difficulty of interpretations of reconnaissance data. The 400 ft. dipole

data would seem to indicate the peak of the anomaly at about station 78. The detailed data, however, indicates the peak anomaly to occur in the vicinity of station 80. This discrepancy is due to the averaging properties of the dipole array. It is difficult to pin down an anomaly to better than one-half dipole length. In the case of the 400 ft. dipole data, the anomalous zone could be within 200 ft. in either direction of station 78. In this particular case it appears that the anomalous zone is actually more towards station 80 than is indicated by the 400 ft. dipole data.

It is clear from this example that some care is required in spotting drill holes on the basis of 400 ft. data. In order to avoid missing a promising ore body by misplacing a test hole, there are two possible techniques. In the first case, detailed IP may be run across the anomalous zone indicated by the reconnaissance data. This detail work would employ 50 or 100 ft. dipoles and would locate a suitable test site fairly accurately. A second solution is to drill several test holes across the 400 ft. dipole data anomaly. These holes would be at 50 or 100 ft. intervals for two hundred feet to either side of the anomaly peak. The choice of which approach to employ depends upon the minimum expected target size, target depth, and economic considerations.

Detailed work with 400 ft. dipoles was done on line 56N, 68N, 80N, 88N, 96N, 148N, 152N, 156N in order to more accurately delineate the anomalous zone encountered on these lines in reconnaissance. The general agreement between the detailed work and the reconnaissance was

quite good except on lines 80N and 96N. We have double checked the work on lines 80N and 96N and have come to the conclusion that the reconnaissance values had a consistent error of 1.0% in apparent frequency effect through line 96N and on the western portion of line 80N. We attribute this error to an error in reading the instrument.

The detailed data reveals two anomalies: one in the vicinity of 80E on lines 56N, 68N and 72N and a broad anomaly on lines 152N and 156N with traces on line 148N. Detailed work with 100 ft. dipoles on lines 56N and 72N indicate that an anomaly exists beneath station 80 + 50E on both these lines. On line 56N, the 100 ft. dipole data indicates the possibility of two separate anomalous zones, one beneath the other. On line 72N, the 100 ft. dipole data does not distinguish separate zones.

On lines 148N through 156N, the detailed work with 400 ft. dipoles reveals two distinct anomalous zones. On line 148N, these zones appear to dip away east and west from under station 44E. On line 152N, there is one anomalous zone dipping to the west from under 44E and another near surface zone between 58E and 60E. On line 156N there is one moderately deep zone beneath 42E and another near surface zone in the vicinity of 54E.

Assessment:

The magnitudes of the anomalous zones encountered on the property are quite small. However, small anomalies appear to be typical of economic, disseminated ore deposits in this region. With this condition in mind, the following conclusions are reached:

1. The anomalous zone 1 represents a zone of probable mineralization between lines 56N and 72N.
2. The anomalous zone 2 represents a zone of possible mineralization between lines 148N and 156N. The magnitude of this anomaly is slightly smaller than that of zone 1, and is, therefore, regarded to be of slightly less potential value.
3. The anomalous zone 3 represents possible isolated patches of mineralization. The anomalies are decidedly smaller than those in zones 1 and 2. It is unlikely that this zone contains mineralization of economic significance.
4. Zones 1 and 2 are marginal anomalies which probably represent finely disseminated metallic mineralization. The IP data cannot be used as an estimate of whether the grade and type of mineralization is sufficient for an economic deposit.

TABLE I

TABULATION OF ANOMALIES ON THE LAURA PROSPECT

<u>LINE NO.</u>	<u>STATIONS</u>	<u>PFE</u>	<u>STATIONS</u>	<u>MCF</u>	<u>ZONE</u>
60N	72-76	mild	72-76	mild	1
32N	68-80	mild	68-80	mild	1
72N	80	mild	72-84	mild	1
56N	68-80	mild	68-72, 76-80, 84-88	mild	1
68N	80-84	mild	68-84	very mild	1
64N	68-72, 76-80	mild	68-84	very mild	1
52N	72 (deep)	mild	72-84	very mild	1
40N	72-84	mild	68-92	very mild	1
48N	72 (deep), 80-84	mild	72-84	very mild	1
44N	68-72, 76-80	mild	68-84	very mild	1
152N	50	mild	36-52	very mild	2
144N	44-48	mild	44-48	very mild	2
160N	88 (deep)	mild	44-48	very mild	3
36N	68-76	mild	68-76	very mild	1
144N	44-48	mild	44-48	very mild	2
112N	112-116	very mild	116 (deep)	faint	
136N	72-88	faint	72-88	faint	3
168N	88-92	faint	88-92	faint	3
144N	28-32	faint	28-32	mild	2
184N	96-104	faint	88-108	faint	3
76N		none	72 (deep)	mild	1
160N		none	76-84	faint	3
144N		none	76-92	faint	3
168N	88 (deep)	faint		faint	3
84N		none		none	
104N		none		none	
120N		none		none	
128N		none		none	
176N		none		none	

APPENDIX I

LINE BY LINE RESULTS OF THE LAURA
PROSPECT INDUCED POLARIZATION SURVEY

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____

frequencies 3 & 0.3 cps

dipole length 400 FT

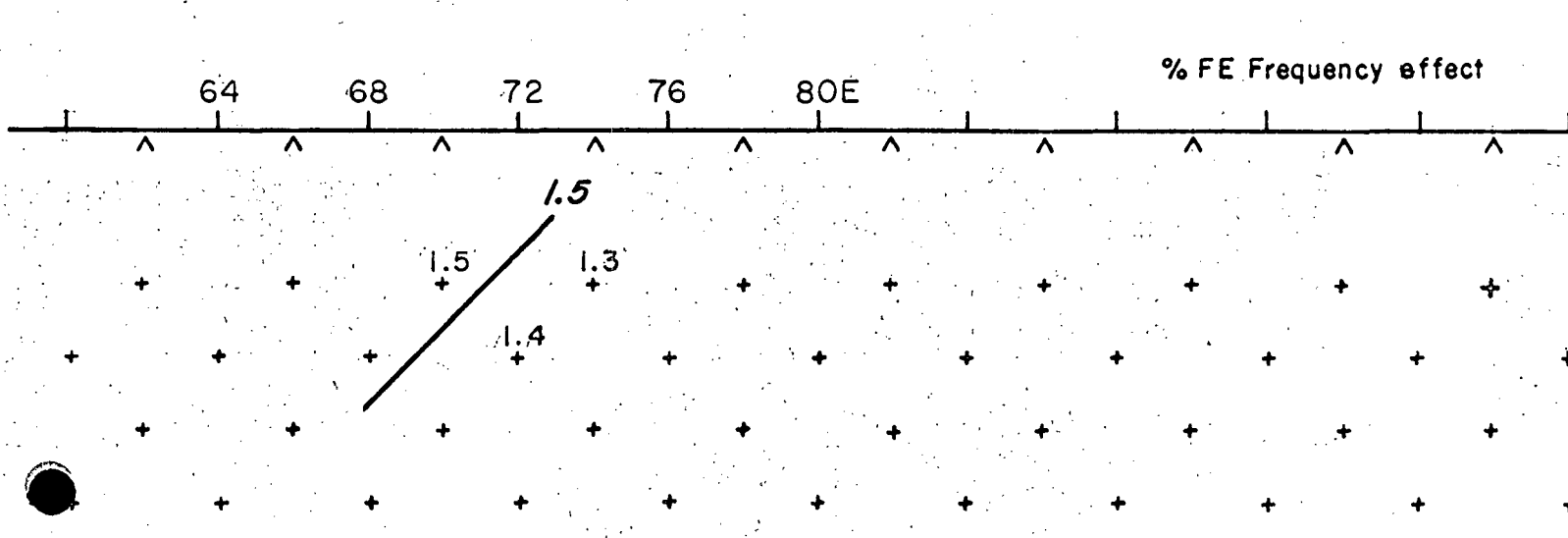
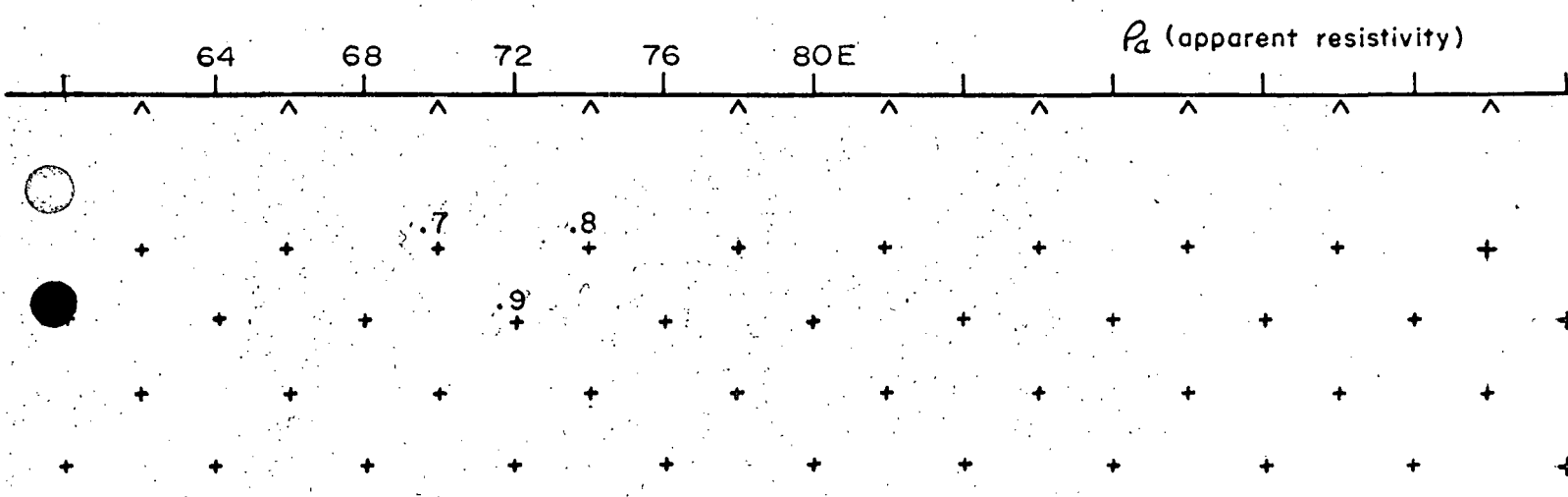
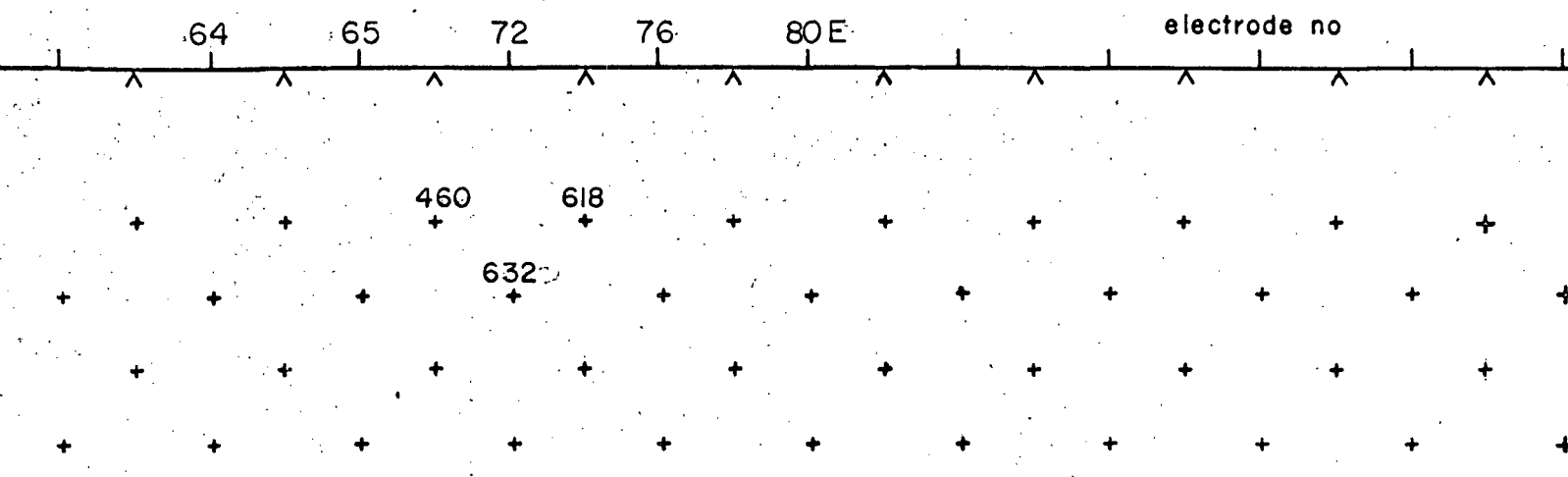
operators _____

location HIGHLAND VAL. LAURA date _____

map ref. _____

line no. 28 N.

bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

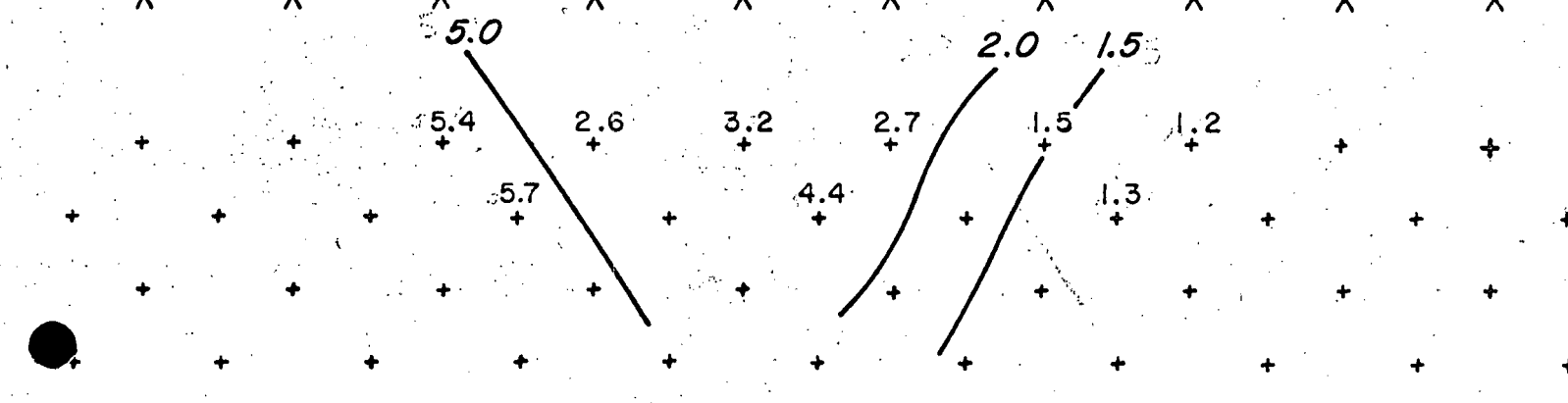
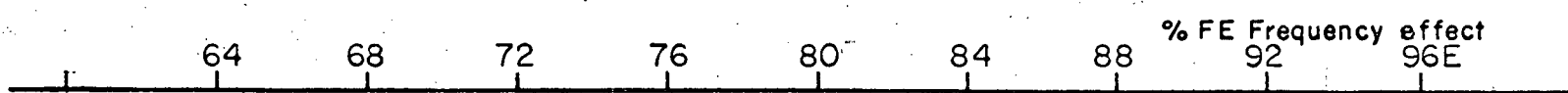
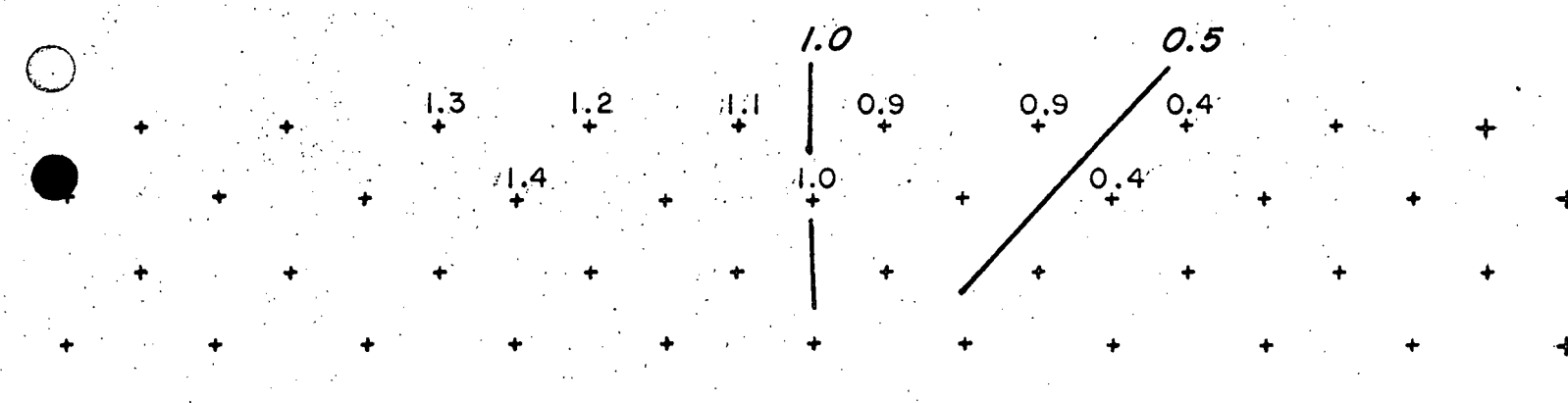
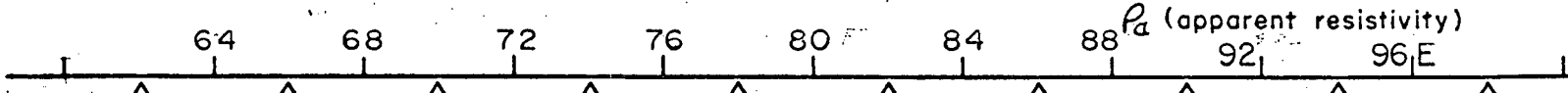
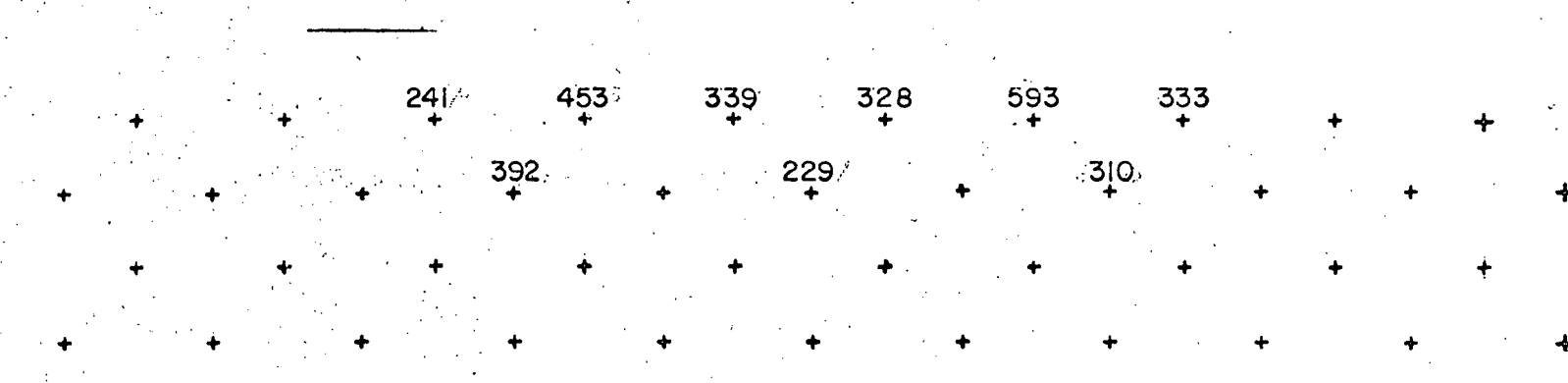
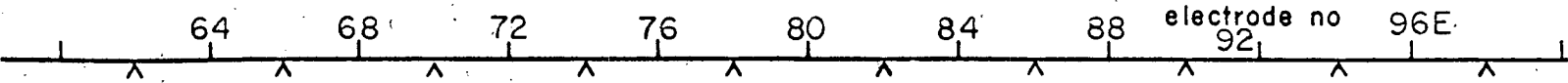
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3 & 0.3 cps
 dipole length 400 FT
 operators _____

location HIGHLAND VAL. LAURA date _____
 map ref. _____
 line no. 32 N
 bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

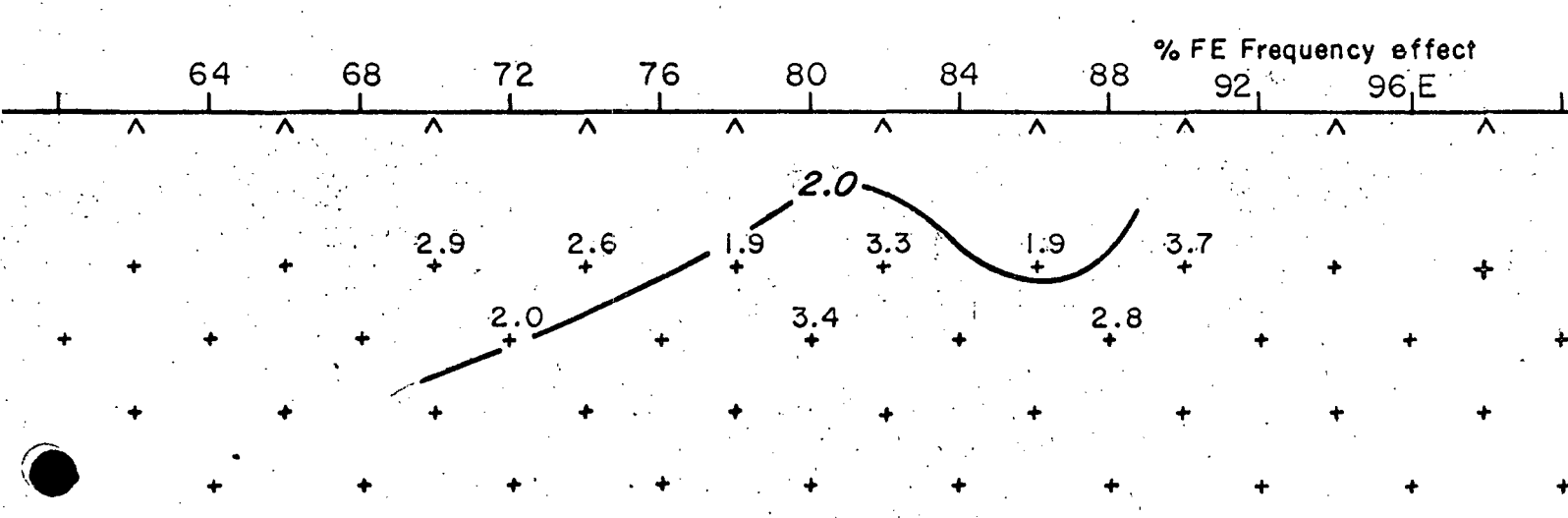
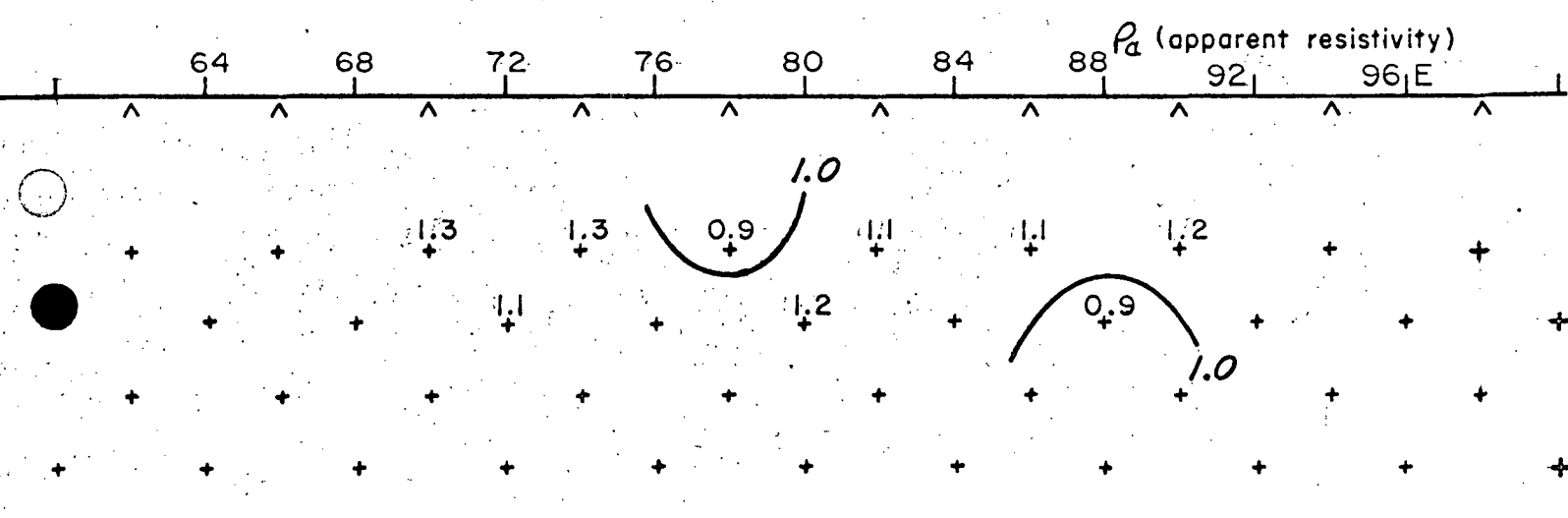
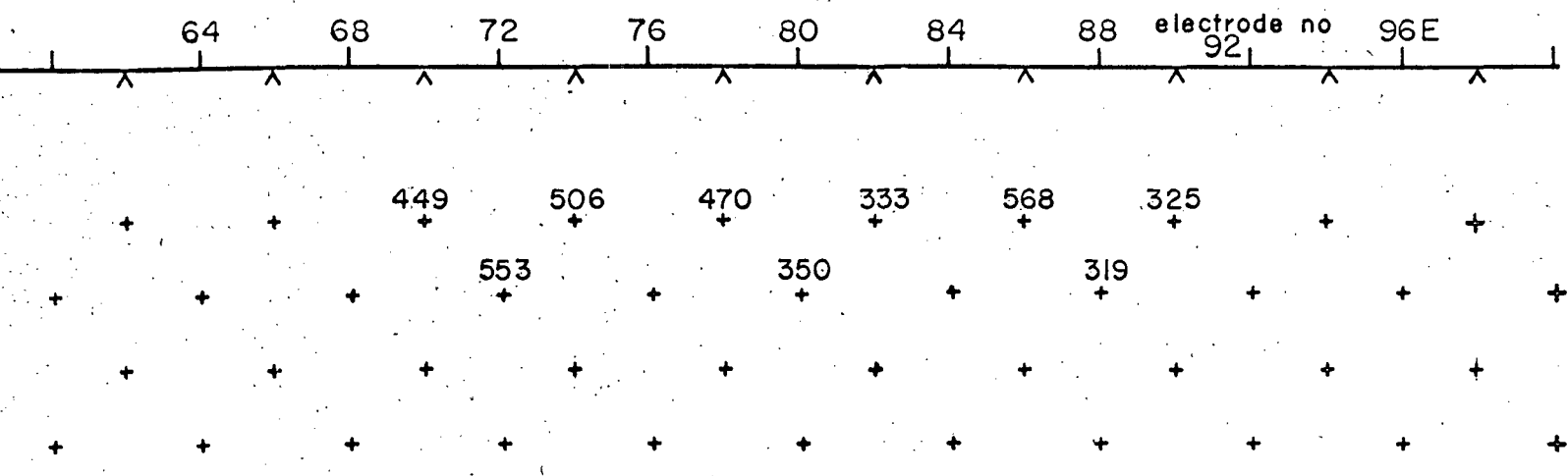
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3.0 & 0.3 cps
 dipole length 400 FT
 operators _____

location HIGHLAND VAL. LAURA date _____
 map ref. _____
 line no. 36N
 bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

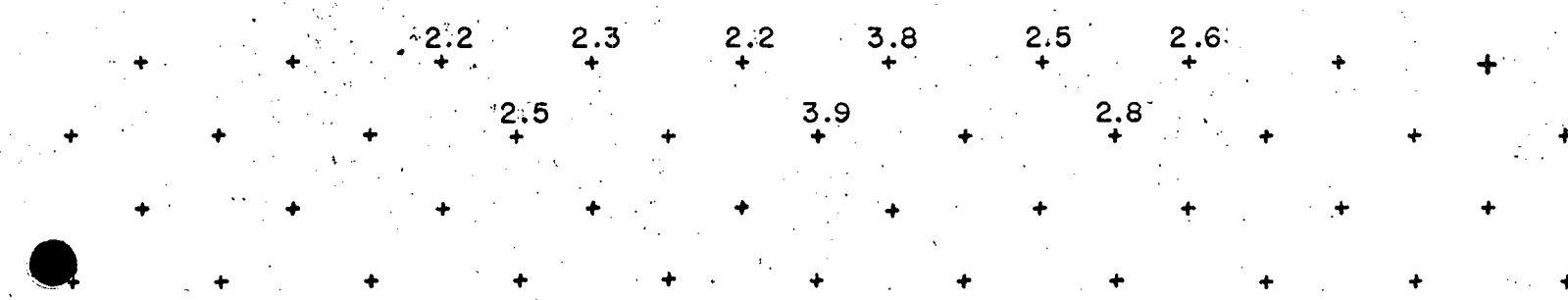
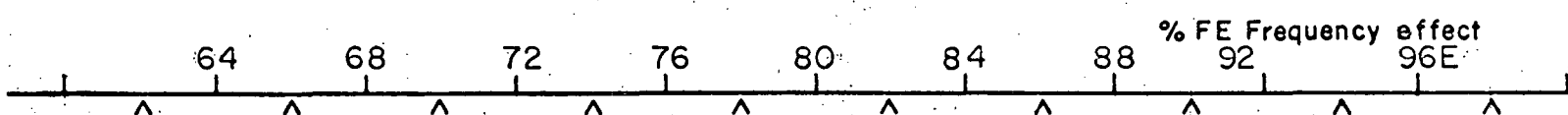
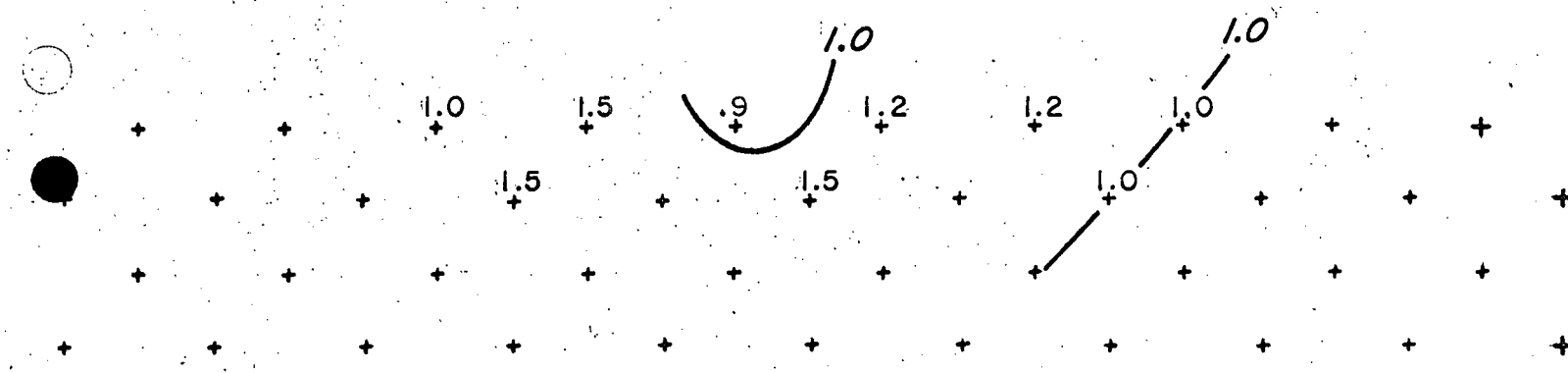
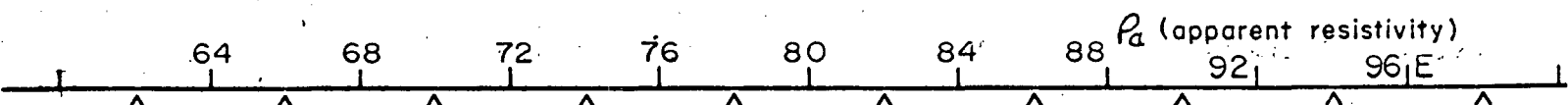
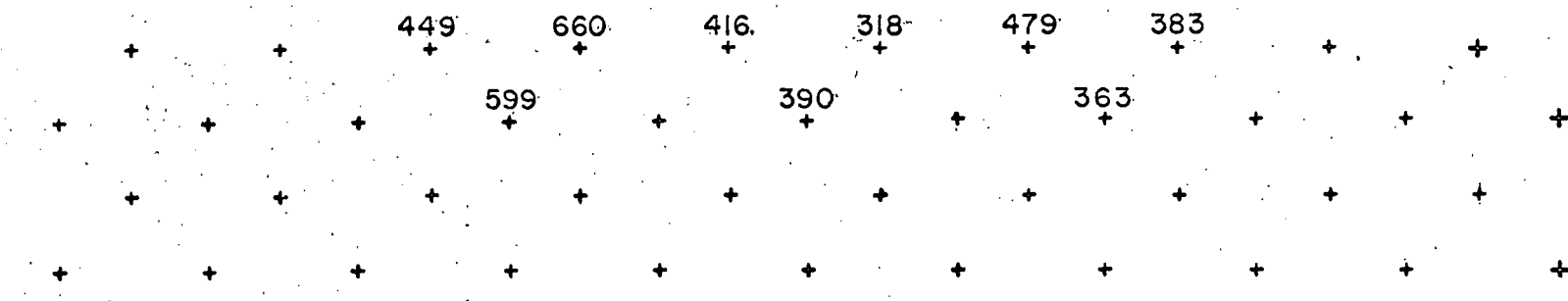
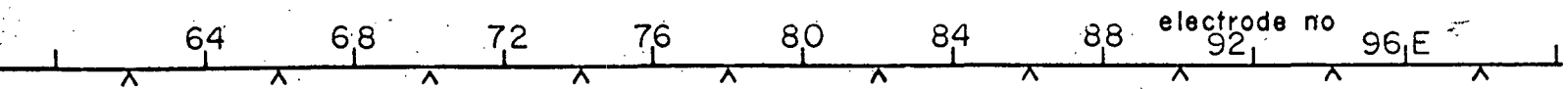
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3.0 & 0.3 cps
 dipole length 400 FT
 operators _____

location HIGHLAND VAL. LAURA date _____
 map ref. _____
 line no. 40N
 bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

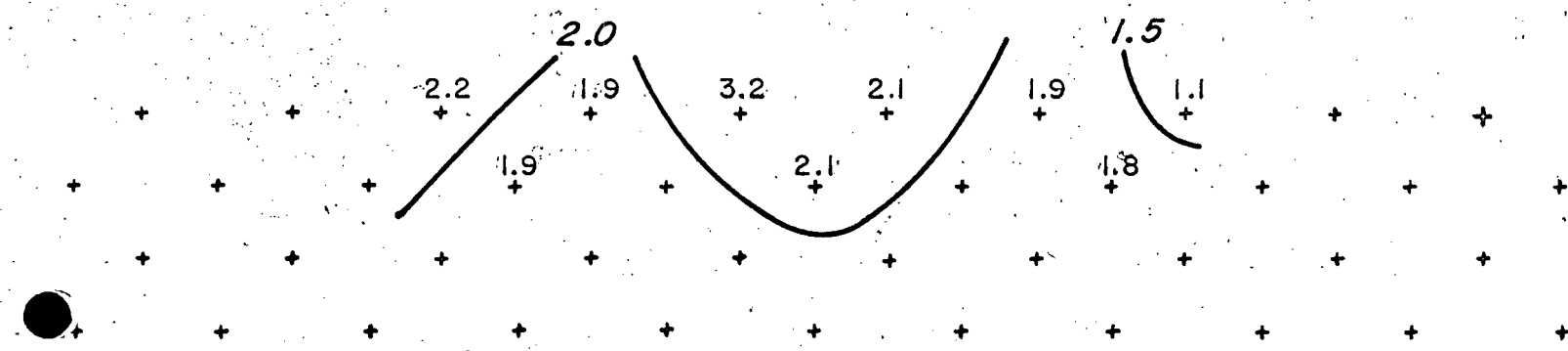
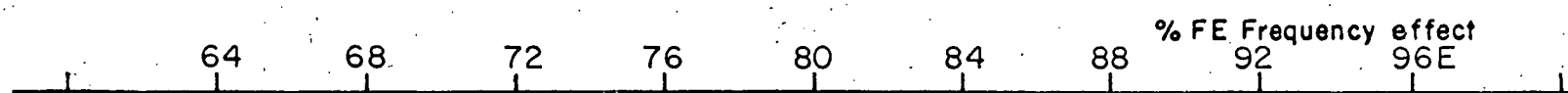
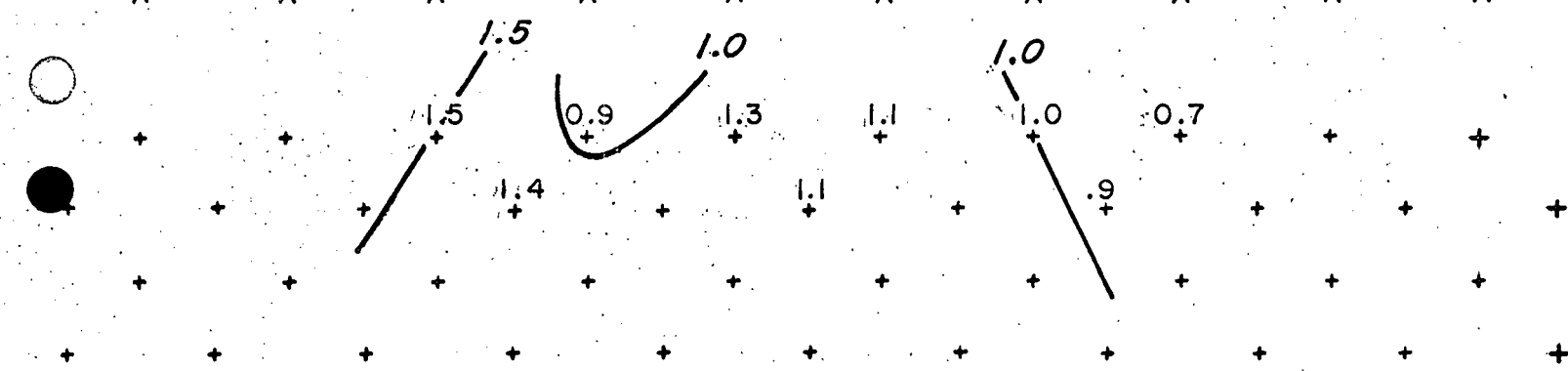
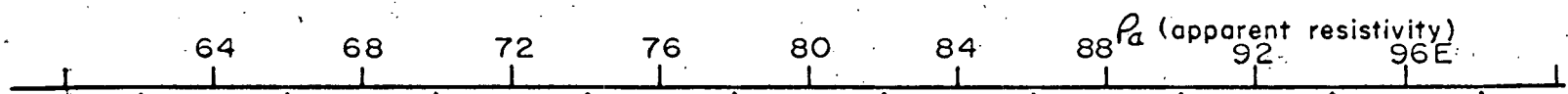
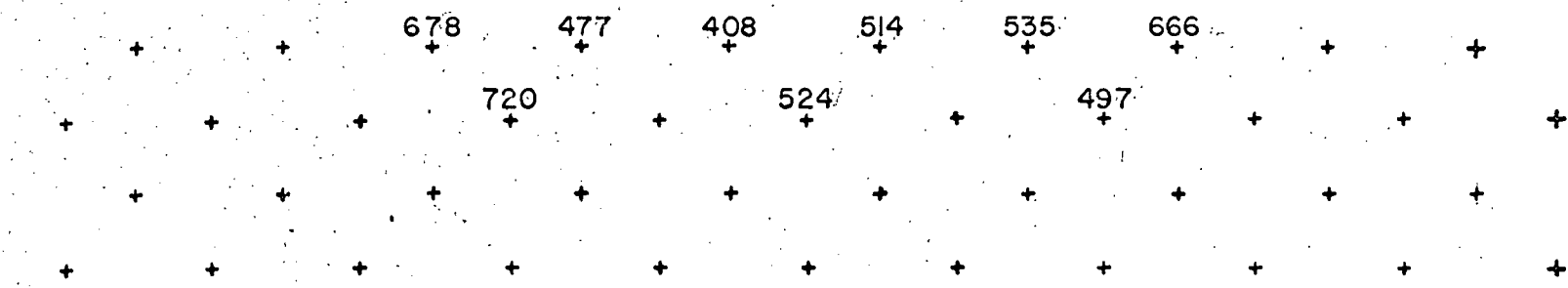
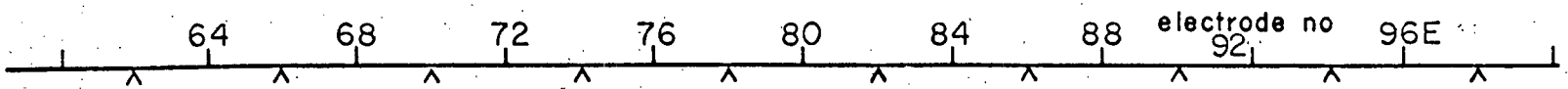
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3.0 & 0.3 cps
 dipole length 400 FT.
 operators _____

date _____

location HIGHLAND VAL. LAURA
 map ref. _____
 line no. 44N
 bearing _____



(M.F.)_a Metal Factor

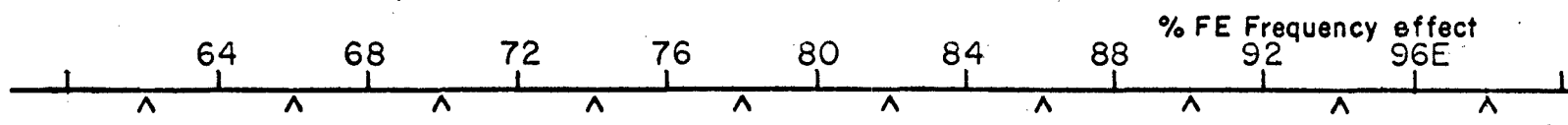
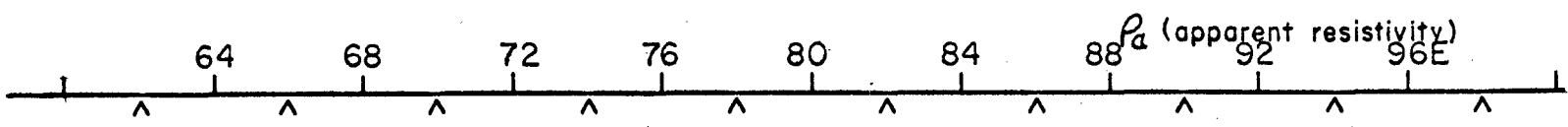
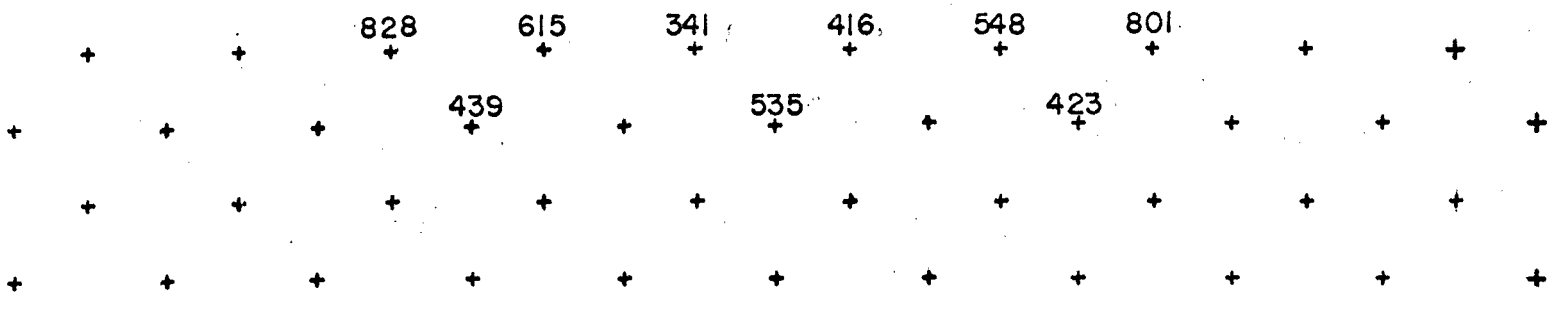
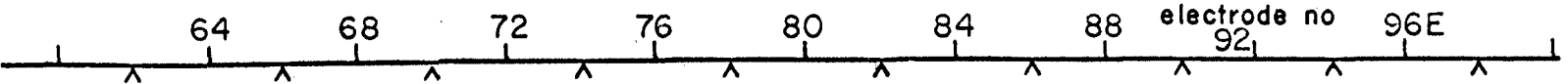
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INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____ frequencies <u>3.0 & 0.3</u> cps dipole length <u>400 FT</u> operators _____	date _____ location <u>HIGHLAND VAL. LAURA</u> map ref. _____ line no. <u>48N</u> bearing _____
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(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

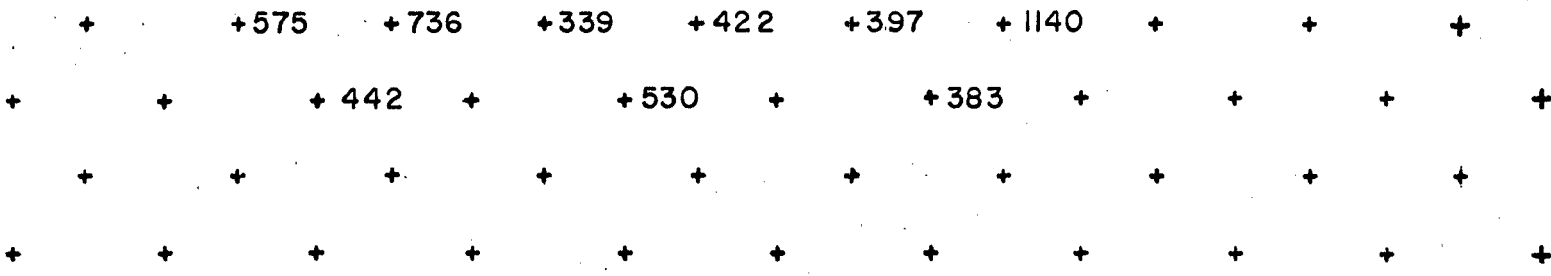
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

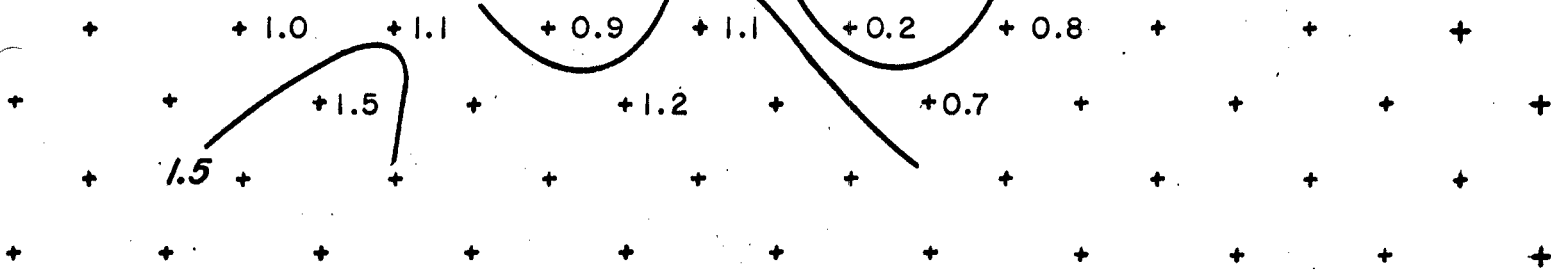
199 BENT STREET, CAMBRIDGE, MASS, 02141

line location <u>LAURA MINES , HIGHLAND VAL.</u> frequencies <u>3.0 & 0.3</u> cps dipole length <u>400'</u> operators _____	location <u>B.C. CANADA</u> date _____ map ref. _____ line no. <u>52N</u> bearing _____
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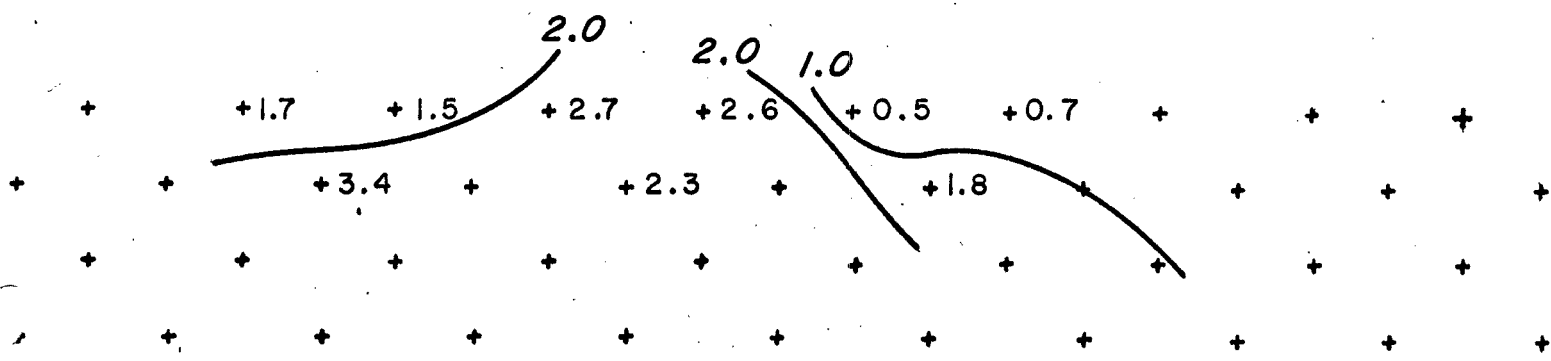
68 72 76 80 84 88 92



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

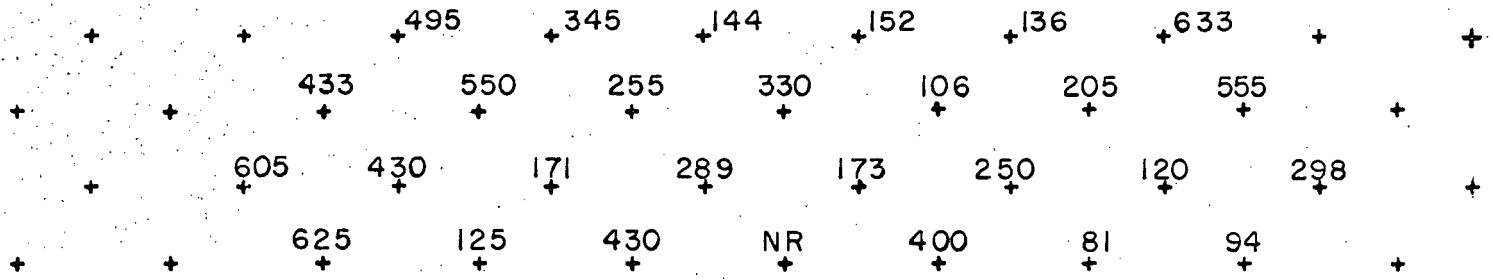
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date _____

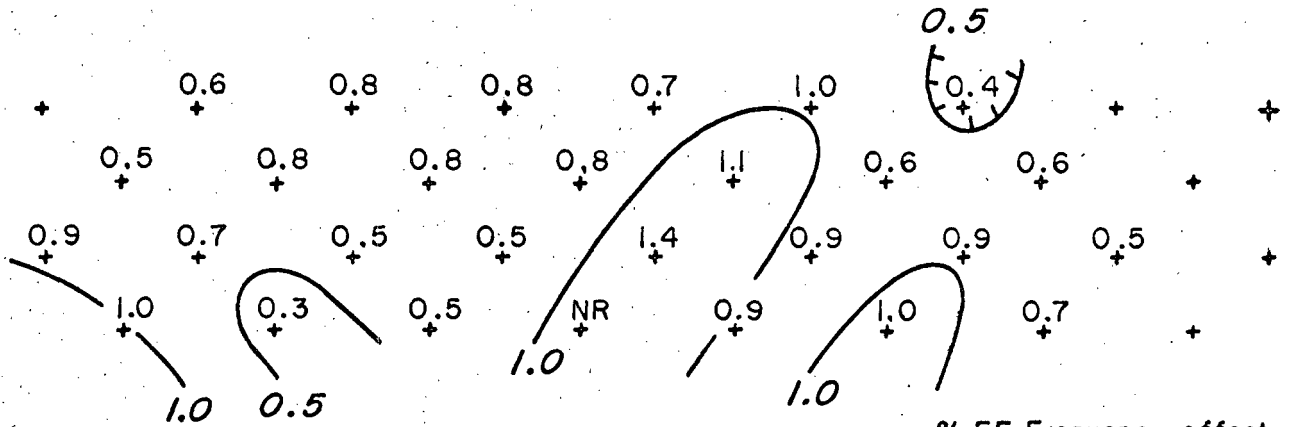
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 frequencies 3 & .3 cps
 dipole length 100' DETAIL
 operators _____

location _____
 map ref. _____
 line no. 56N
 bearing _____

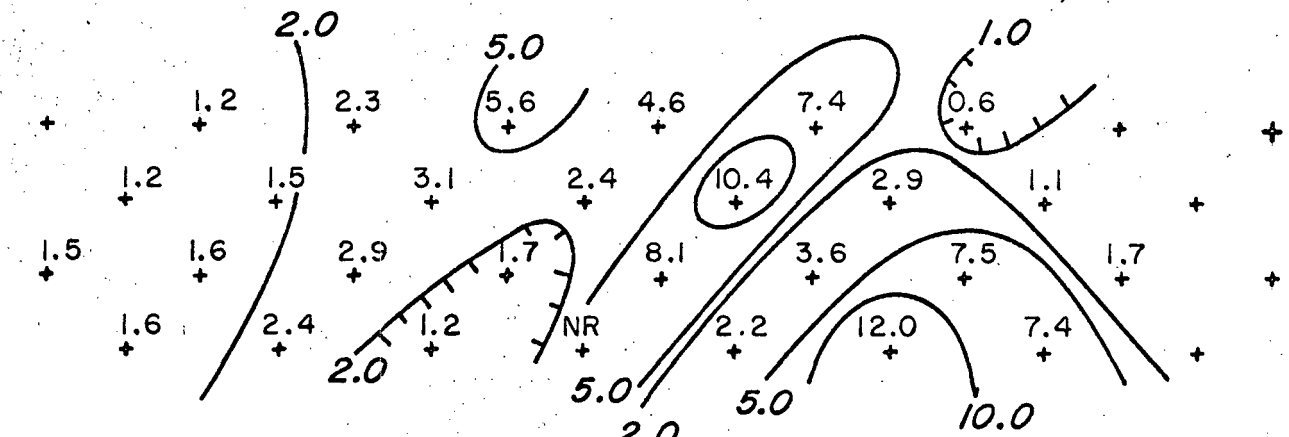
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ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

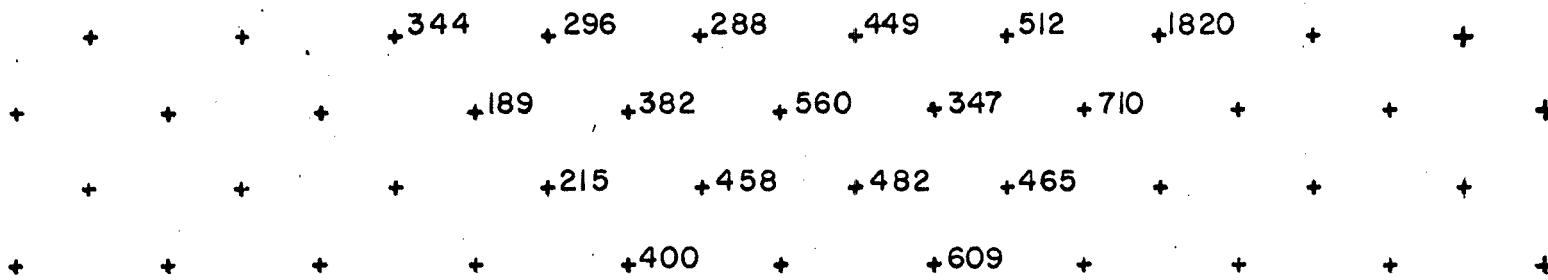
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date _____

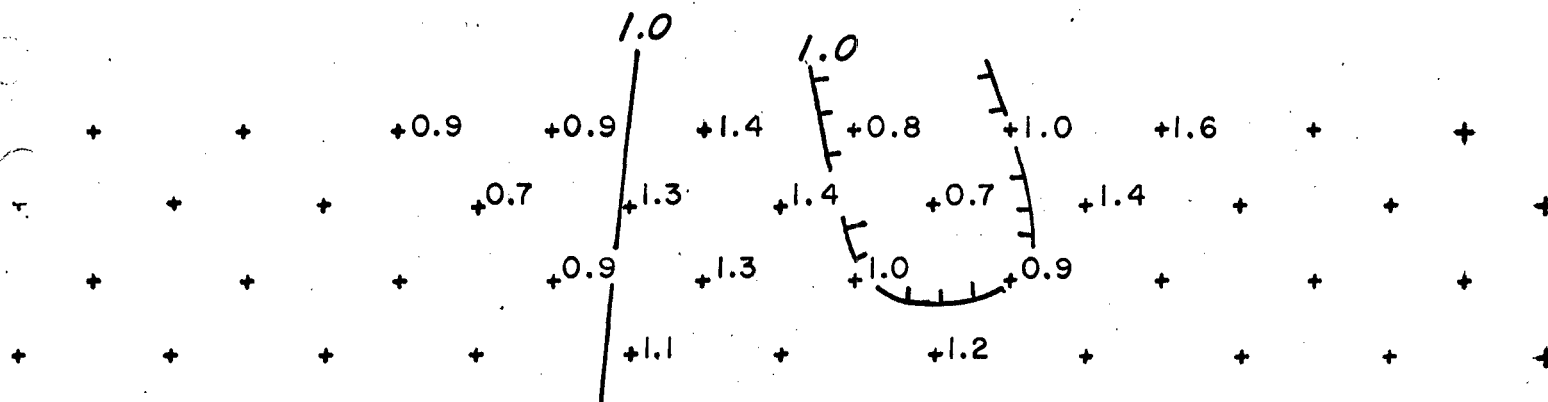
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 frequencies 3 & .3 cps
 dipole length 400' DETAIL
 operators GC/DB

location _____
 map ref. _____
 line no. 56 N
 bearing _____

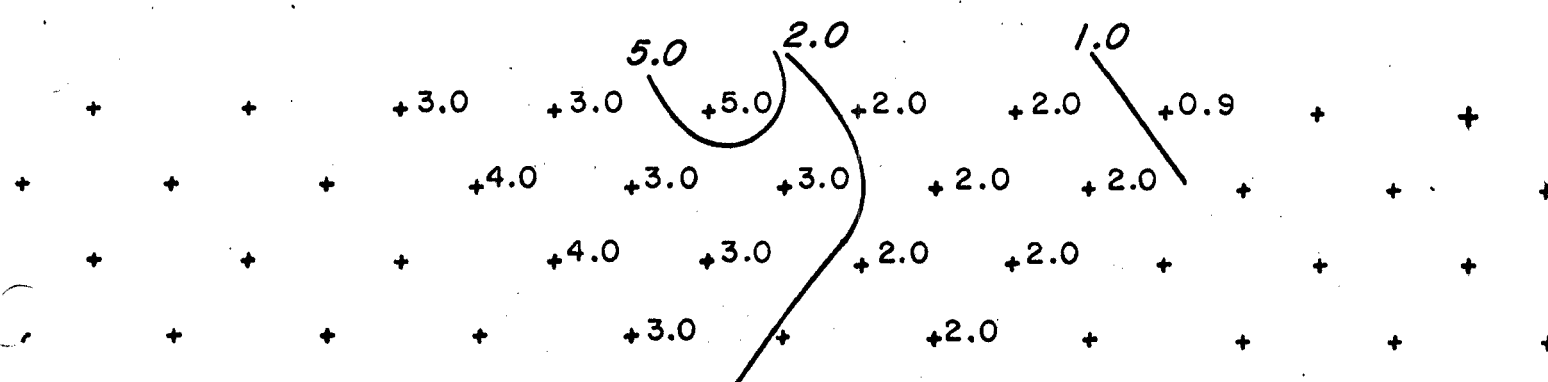
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ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

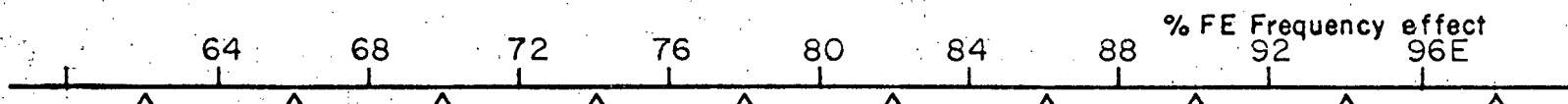
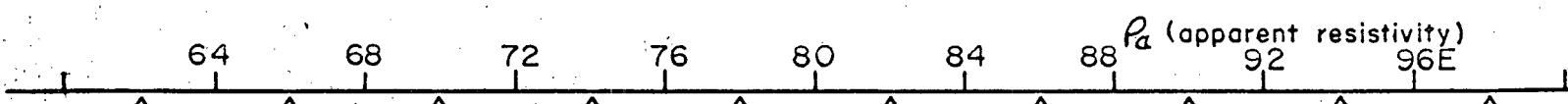
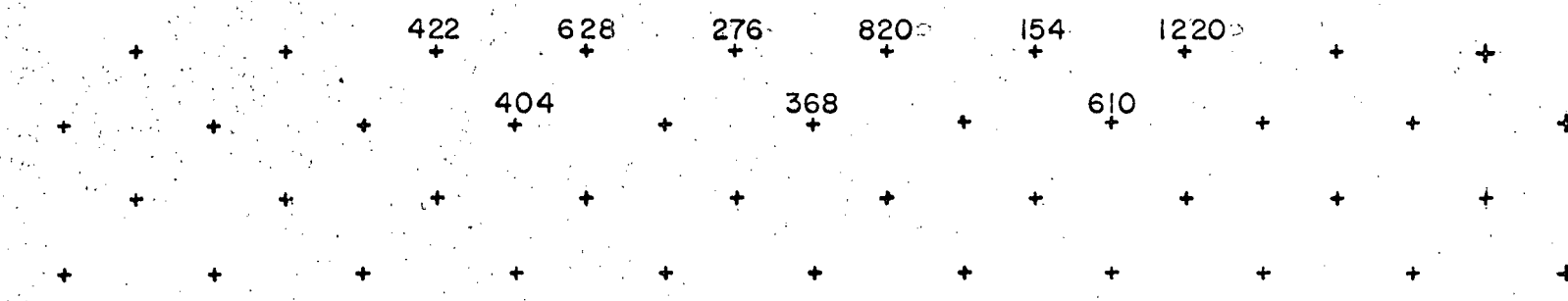
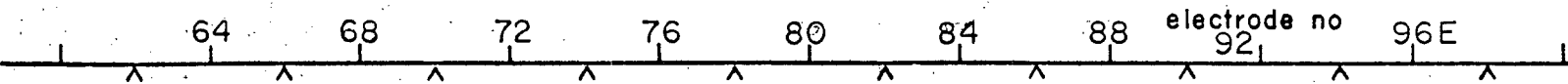
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3 & 0.3 cps
 dipole length 400FT
 operators _____

location HIGHLAND VAL. LAURA date _____
 map ref. _____
 line no. 56N
 bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

location B.C. CANADA

frequencies 3.0 & 0.3 cps

map ref. _____

dipole length 400'

line no. 60 N

operators _____

bearing _____

68 72 76 80 84 88 92

+ +615 +238 +392 +249 +560 +1220 + + +

+ + +445 + +438 + +676 + + + +

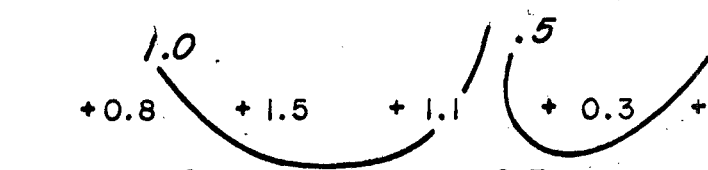
+ + + + + + + + + + +

+ + + + + + + + + + +

ρ_a (apparent resistivity)

^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^

+ +0.8 +1.5 +1.1 +0.3 +0.9 +1.0 + + +



+ + +0.9 + +0.7 + +0.8 + + + +

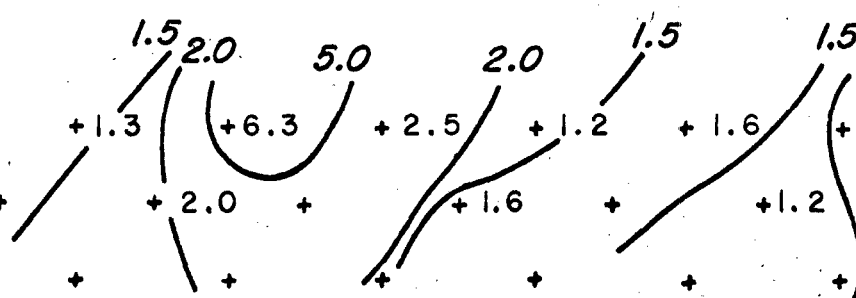
+ + + + + + + + + + +

+ + + + + + + + + + +

% FE Frequency effect

^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^

+ +1.3 +6.3 +2.5 +1.2 +1.6 +0.8 + + +



+ + + + + + +1.2 + + + +

+ + + + + + + + + + +

+ + + + + + + + + + +

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

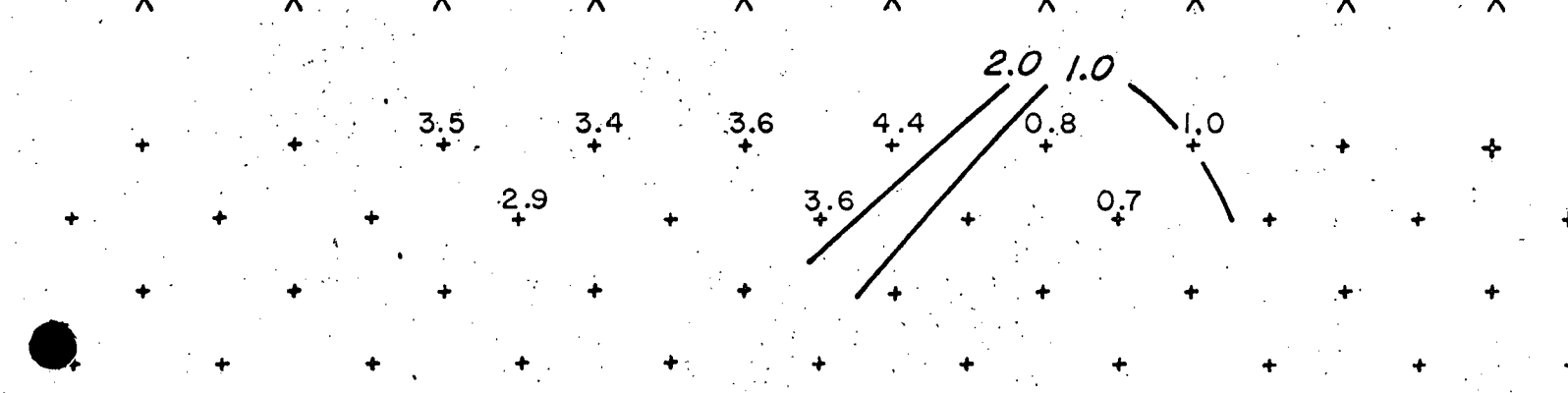
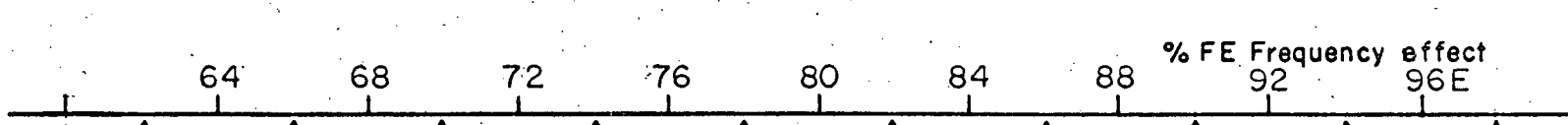
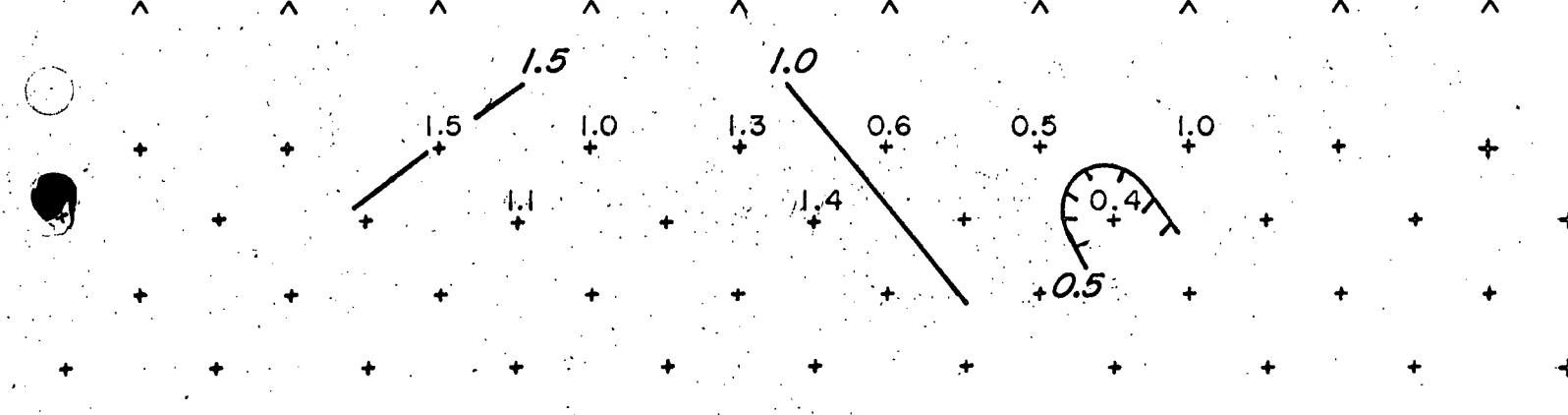
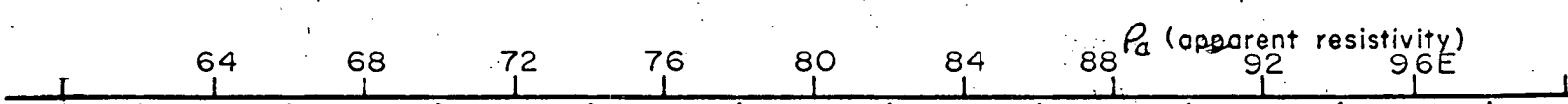
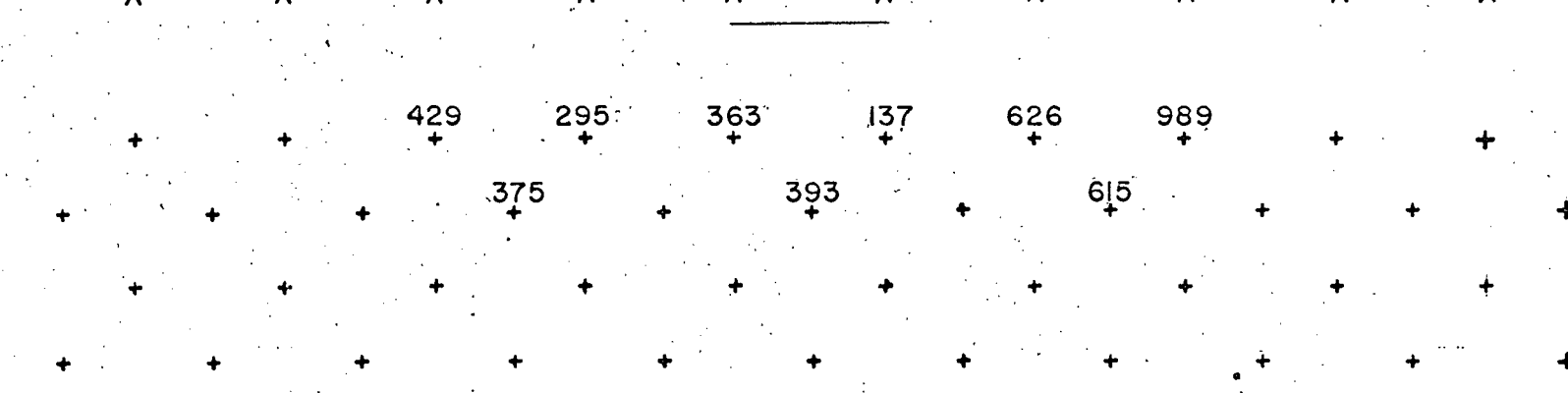
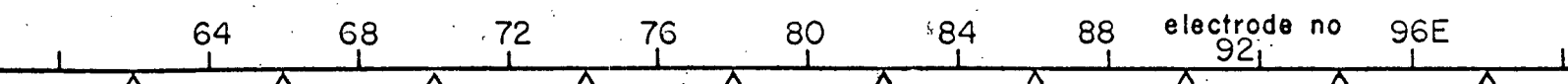
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3 & 0.3 cps
 dipole length 400 FT
 operators _____

location HIGHLAND VAL. LAURA date _____
 map ref. _____
 line no. 64 N
 bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

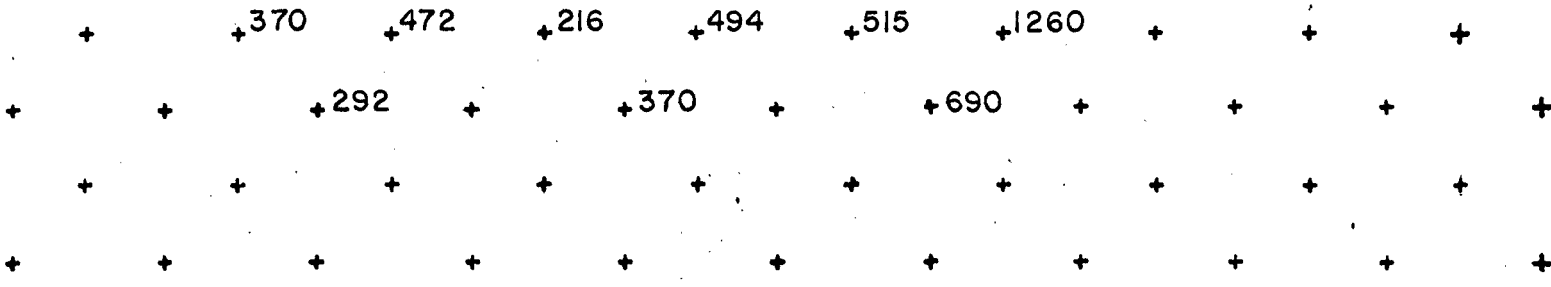
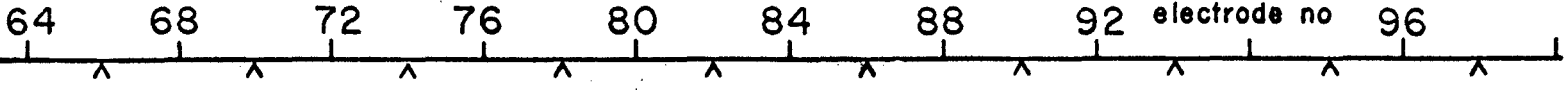
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

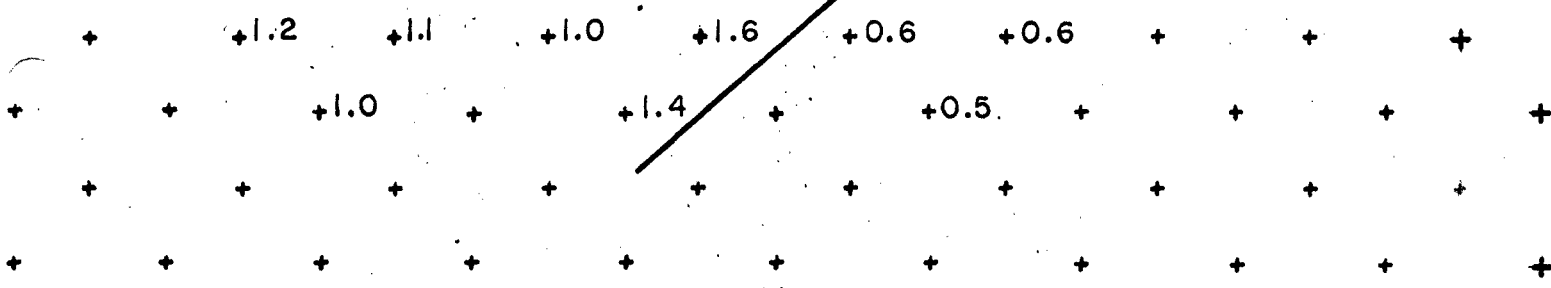
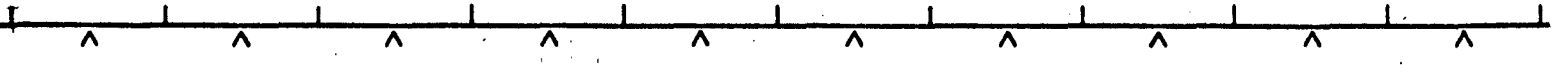
date 7/23/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400
 operators _____

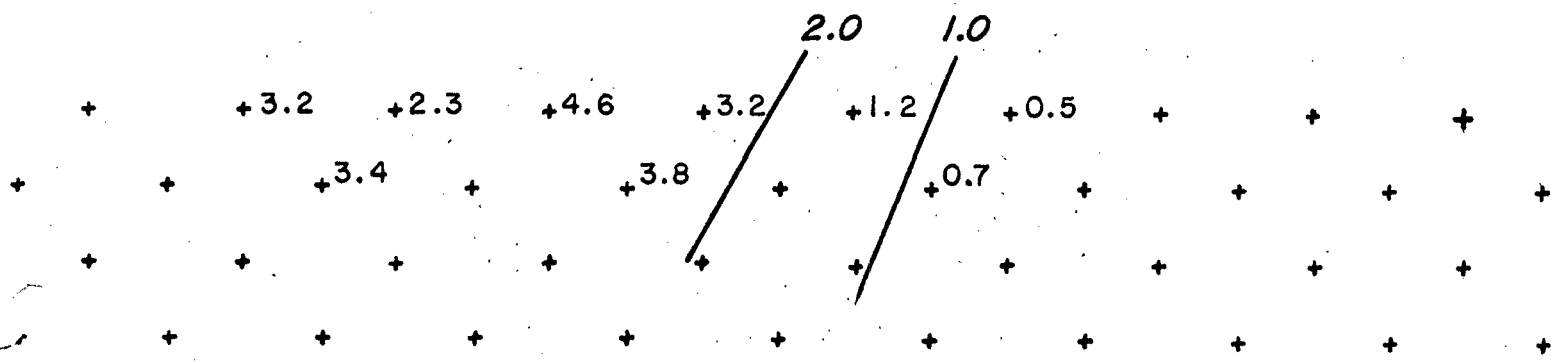
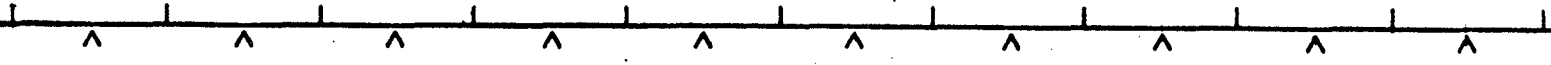
location _____
 map ref. _____
 line no. 68N
 bearing _____



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

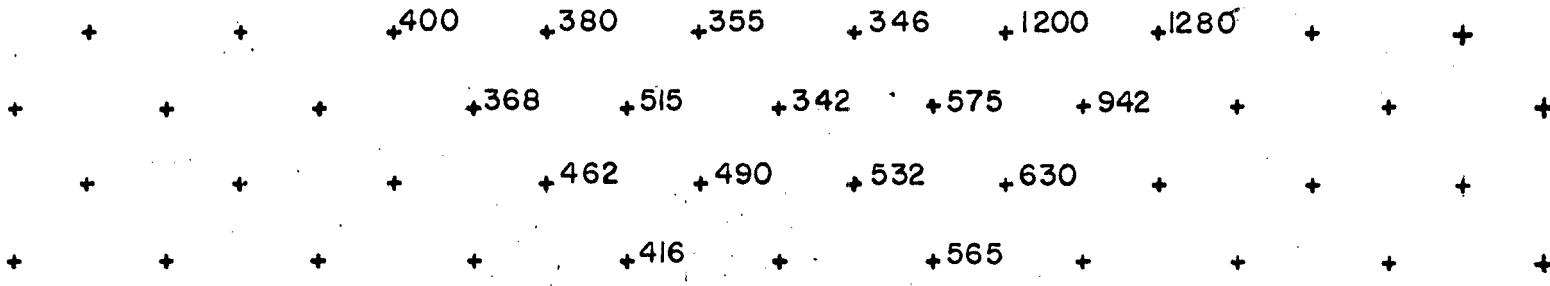
199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

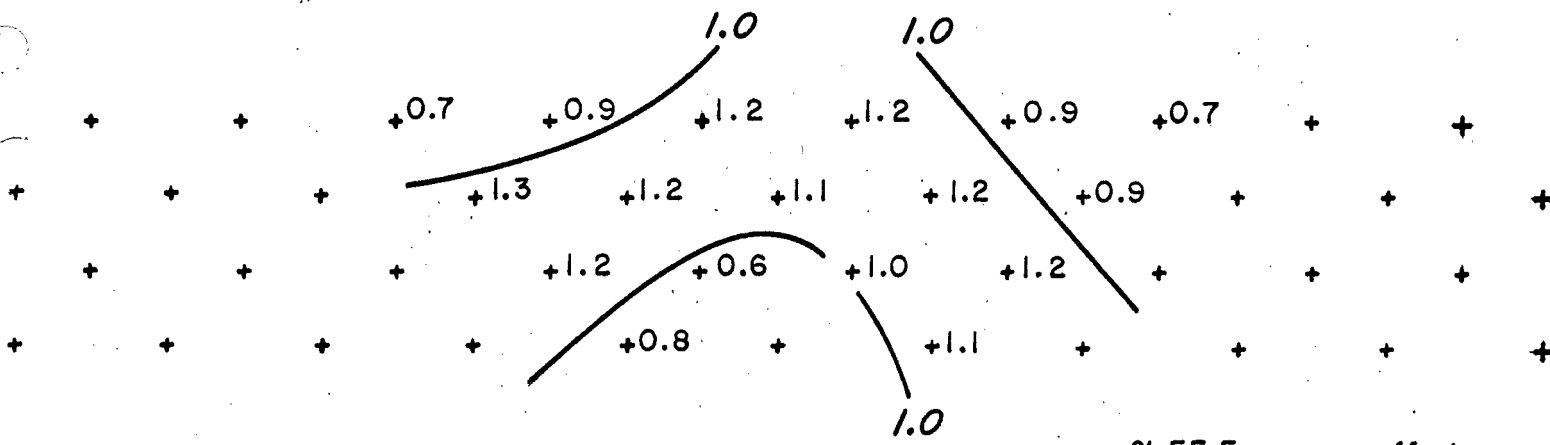
line location LAURA
frequencies 3 & .3 cps
dipole length 400' DETAIL
operators GC/DB

location _____
map ref. _____
line no. 68N
bearing _____

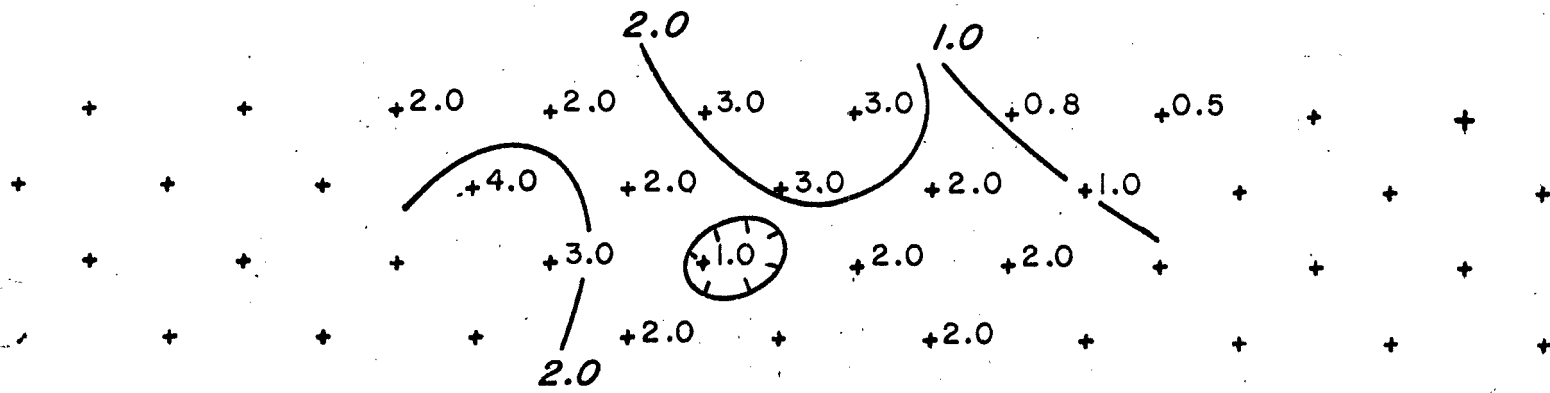
66E 70 74 78 82 86 90 electrode no 98E



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

location B.C. CANADA

frequencies 3.0 & 0.3 cps

map ref. _____

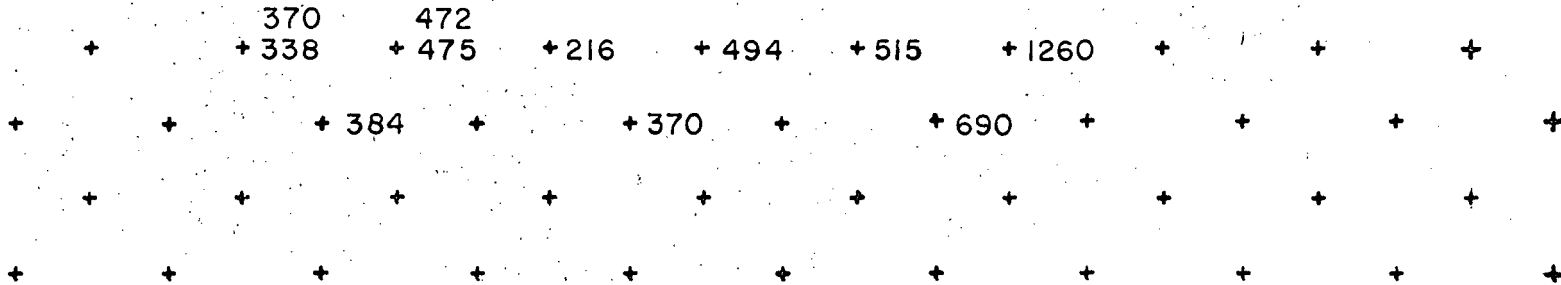
dipole length 400'

line no. 68N

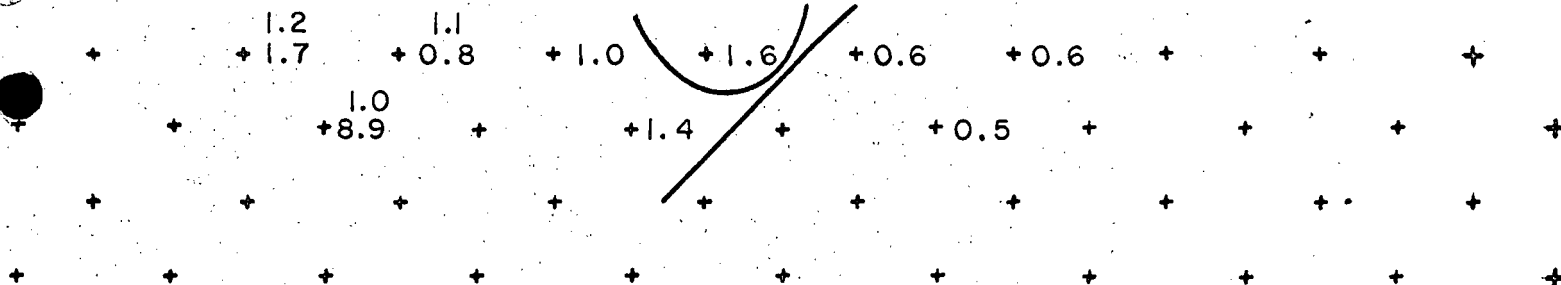
operators _____

bearing _____

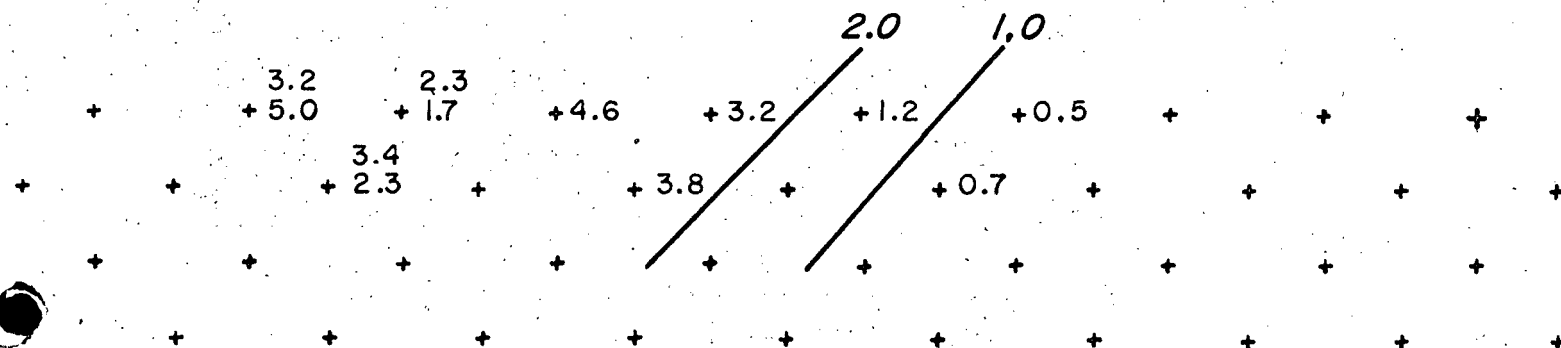
68 72 76 80 84 88 92



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_d Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA
 frequencies 3 & .3 cps
 dipole length 100 DETAIL
 operators _____

location _____
 map ref. _____
 line no. 72N
 bearing _____

74 75 76 77 78 79 80 81 electrode no 83

+541	+174	+133	+209	+306	+224	+441	+1429	+1086	+213	
+	+280	+206	+123	+310	+317	+410	+652	+1386	+866	+
+	+282	+212	+197	+296	+563	+509	+622	+805	+	
+	+	+251	+	+197	+	+633	+	+365	+	

ρ_a (apparent resistivity)

+0.6	+0.8	+0.7	+0.8	+0.9	+1.2	+1.8	+1.1	+1.1	+0.9	
+	+0.9	+0.7	+0.7	+0.9	+1.2	<u>+2.0</u>	+1.8	+1.2	+1.0	+
+	+0.7	+0.9	+0.7	+1.2	+1.8	+1.9	+1.7	+1.0	+	
+	+	+0.8	+	+1.2	+	+1.4	+	+1.5	+	

% FE Frequency effect

+1.5	+4.6	+5.3	+3.8	+2.9	+5.4	+4.1	+0.8	+1.0	+2.8	
+	+3.2	+3.4	+5.7	+2.9	+3.8	+4.9	+2.8	+0.9	+1.2	+
+	+2.5	+4.3	+3.6	+4.1	+3.2	+3.7	+2.7	+1.2	+	
+	+3.2	+	+6.1	+	+2.2	+	+4.1	+		

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

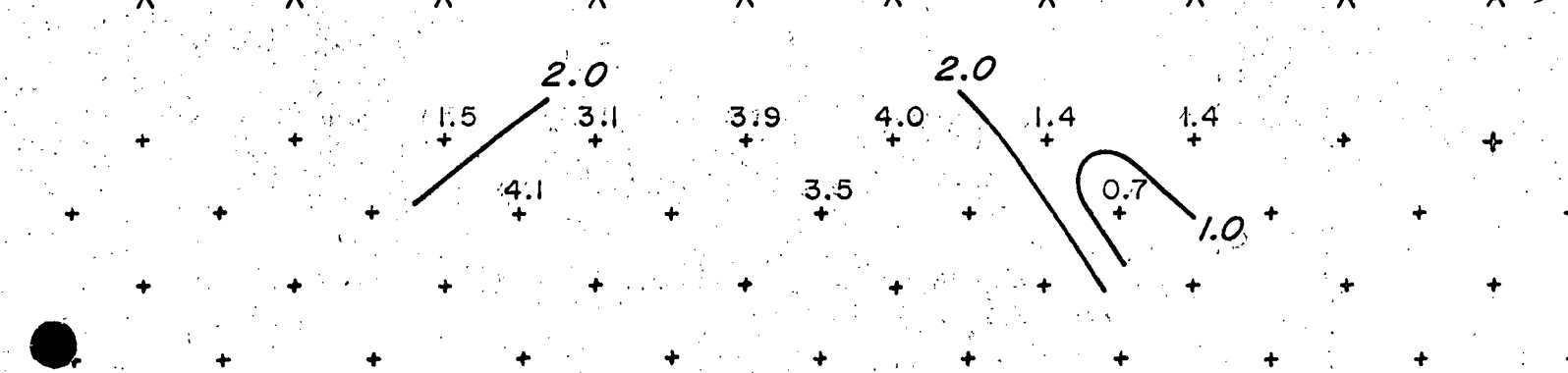
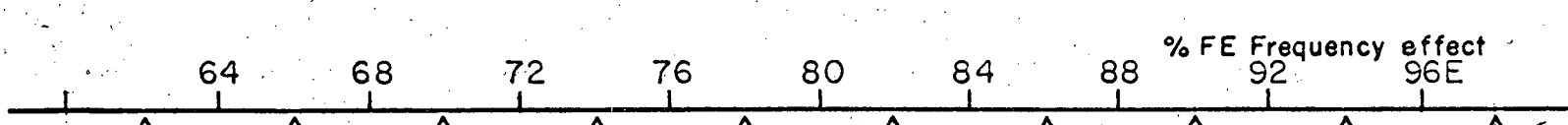
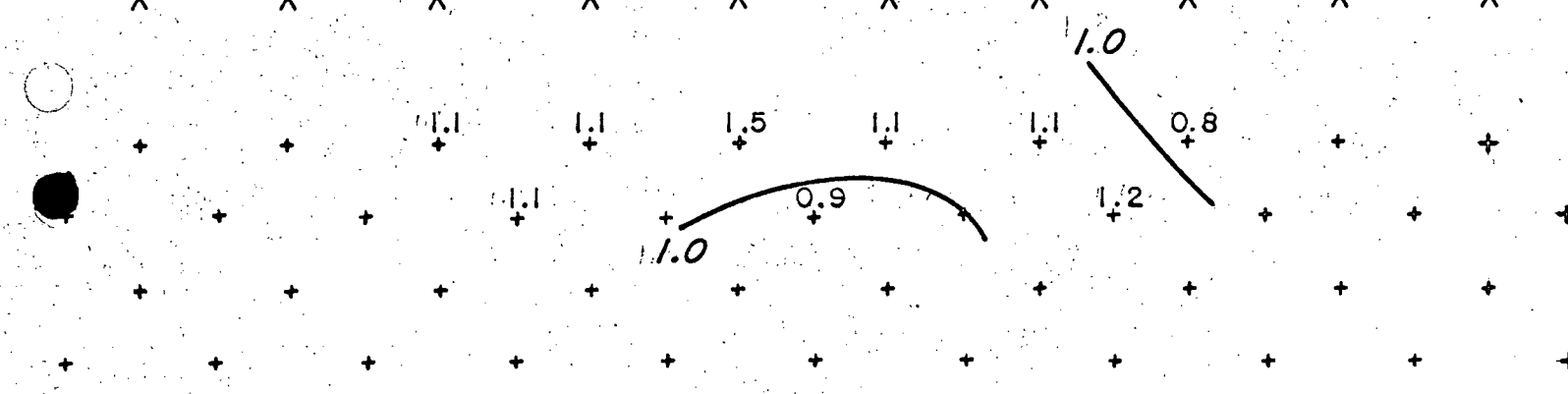
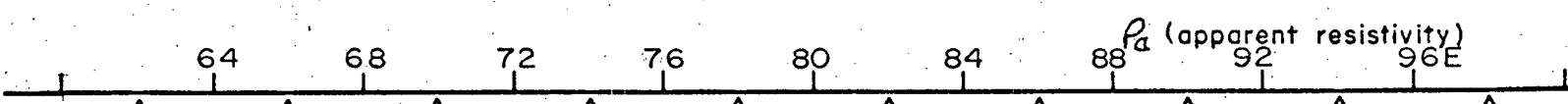
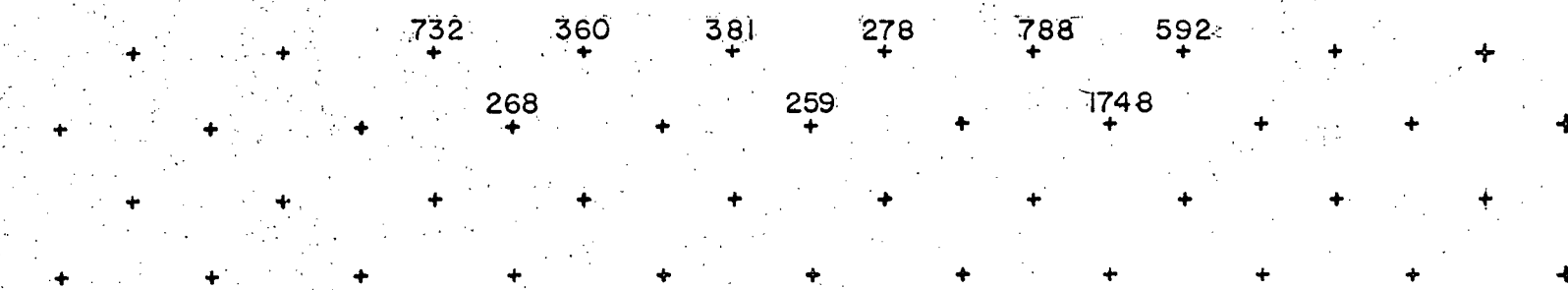
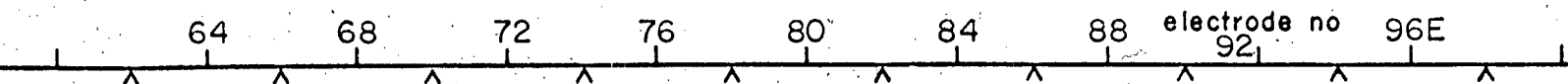
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location _____
 frequencies 3 & 0.3 cps
 dipole length 400 FT
 operators _____

location HIGHLAND VAL. LAURA date _____
 map ref. _____
 line no. 72 N
 bearing _____



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

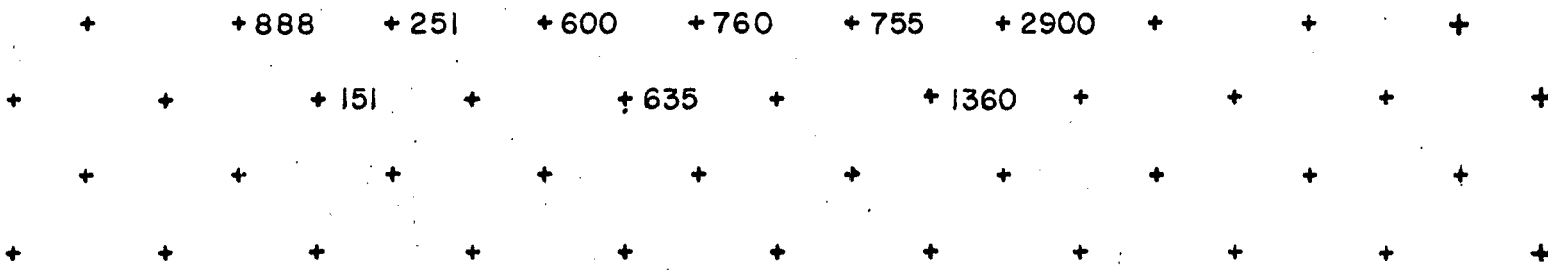
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

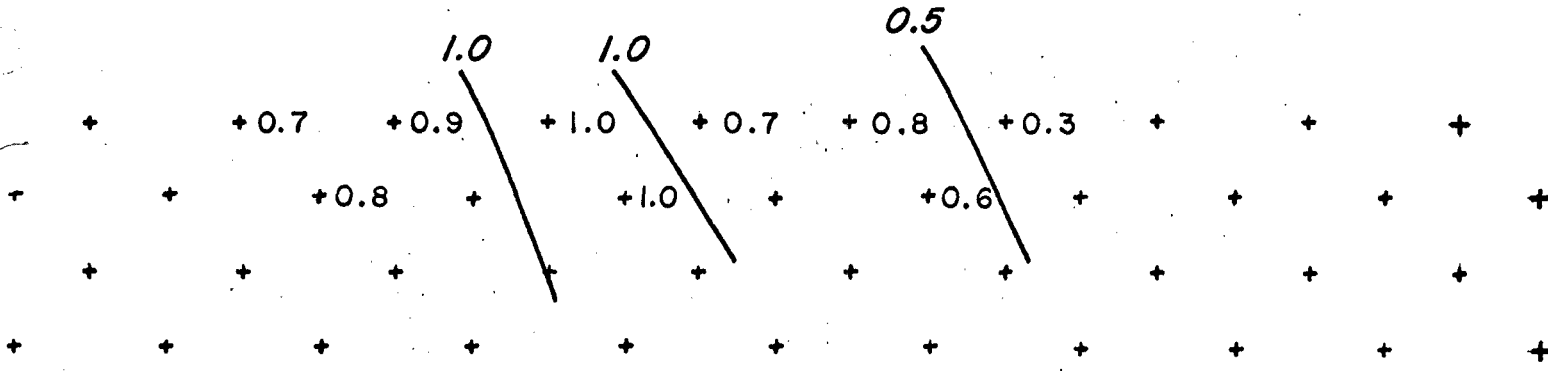
line location LAURA MINES, HIGHLAND VAL.
 frequencies 3.0 & 0.3 cps
 dipole length 400'
 operators _____

location B.C. CANADA date _____
 map ref. _____
 line no. 76N
 bearing _____

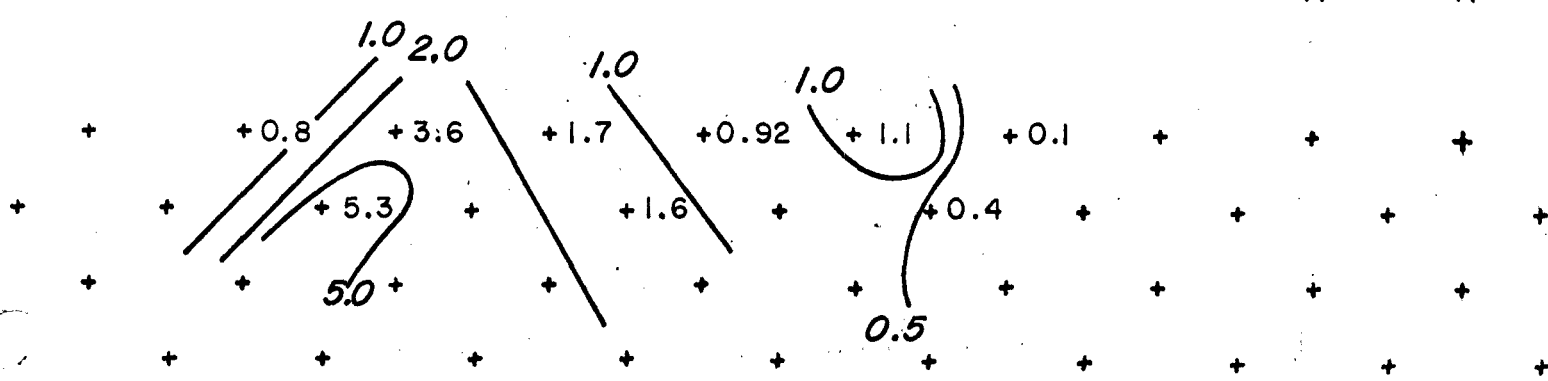
68 72 76 80 84 88 92



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

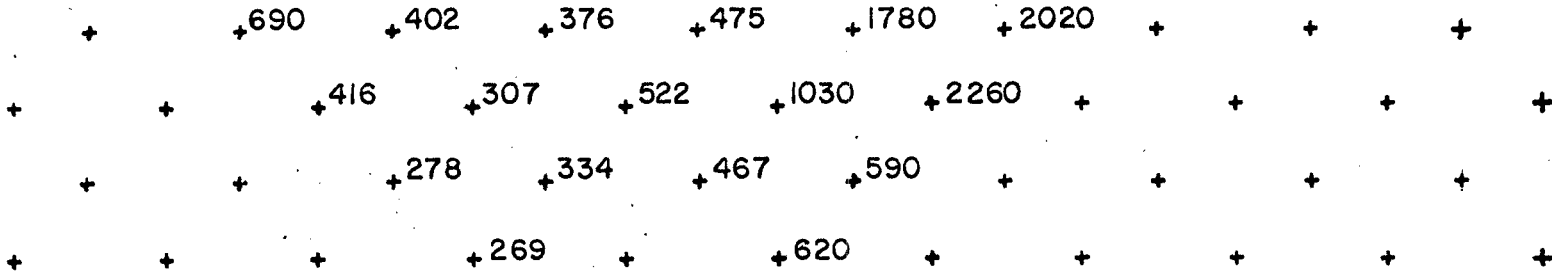
199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

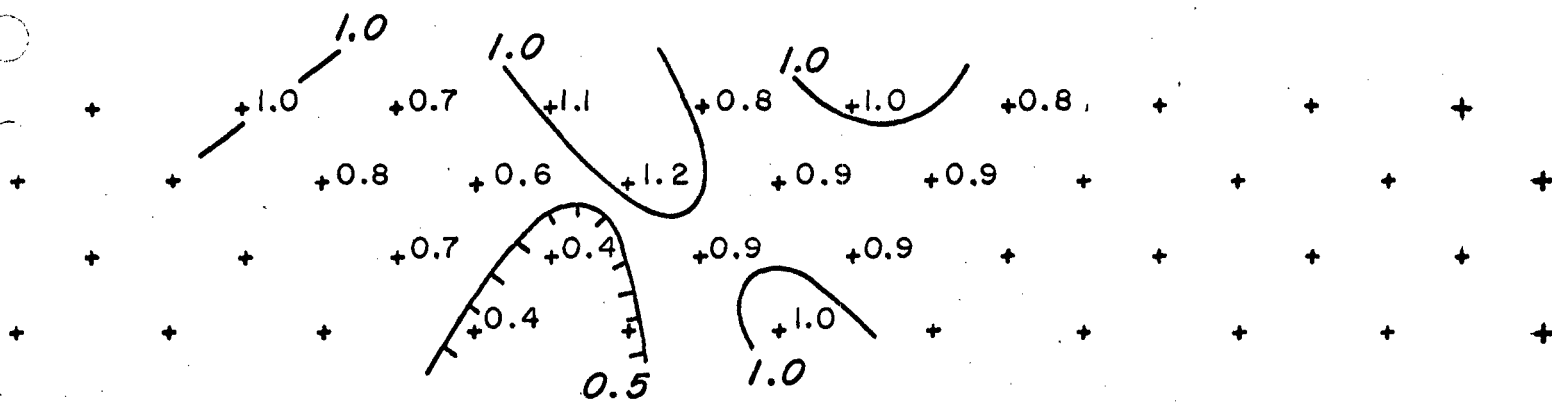
line location Laura
 frequencies 3 & .3 cps
 dipole length 400' DETAIL
 operators GC/DB

location _____
 map ref. _____
 line no. 80N
 bearing _____

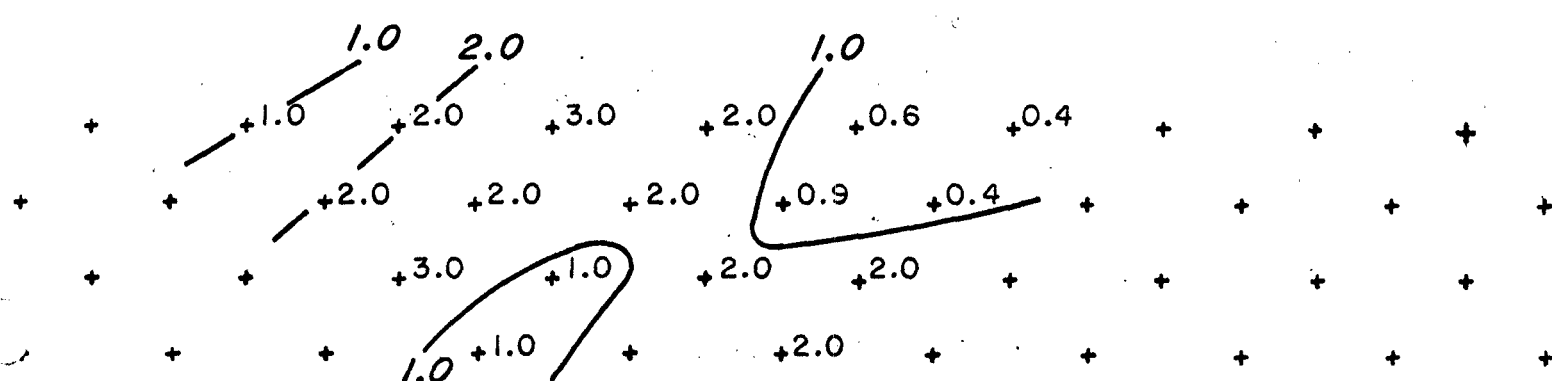
66E 70 74 78 82 86 90 electrode no 98E



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURAMINES, ASHCROFT

location B.C. CANADA

frequencies 3.0 & 0.3 cps

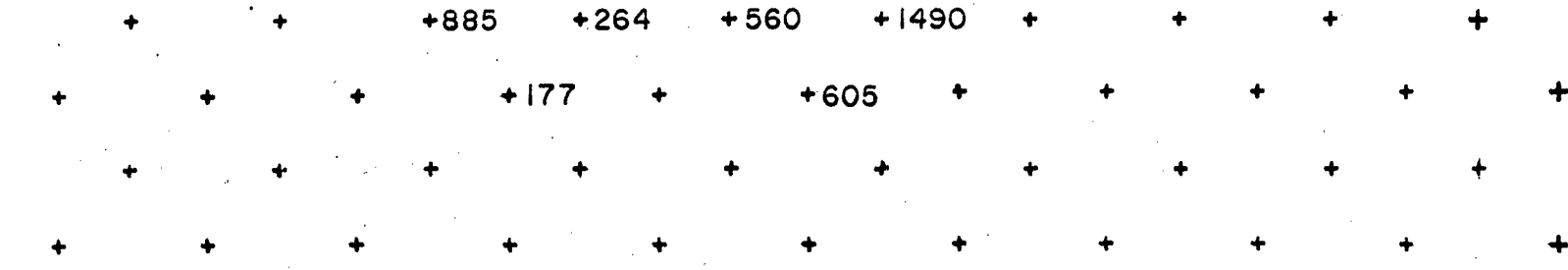
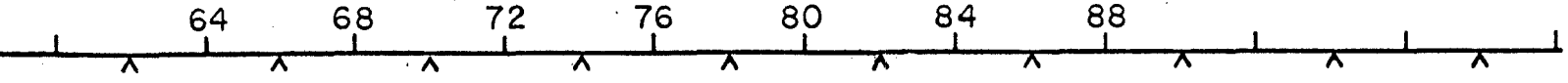
map ref. _____

dipole length 400'

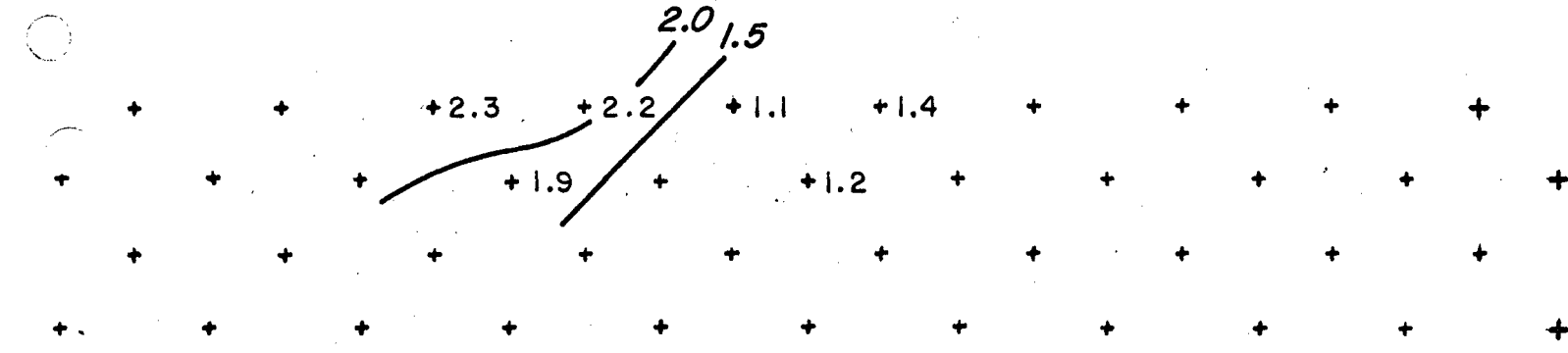
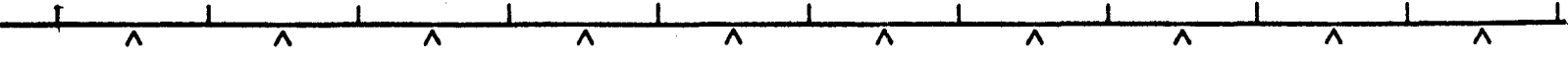
line no. 80 N

operators _____

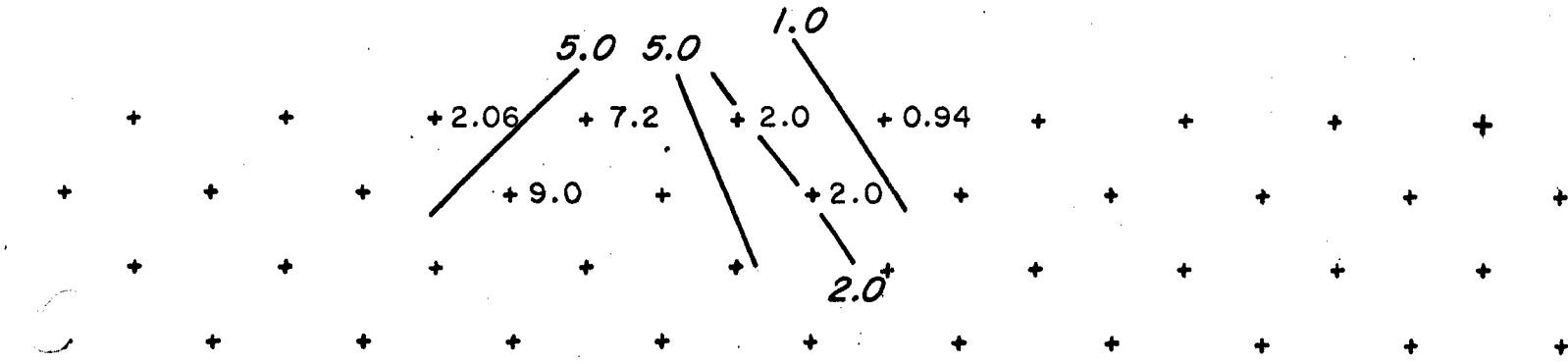
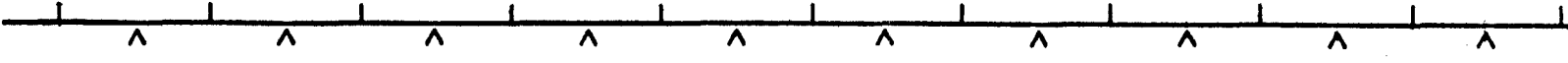
bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

location B.C. CANADA

frequencies 3.0 & 0.3 cps

map ref. _____

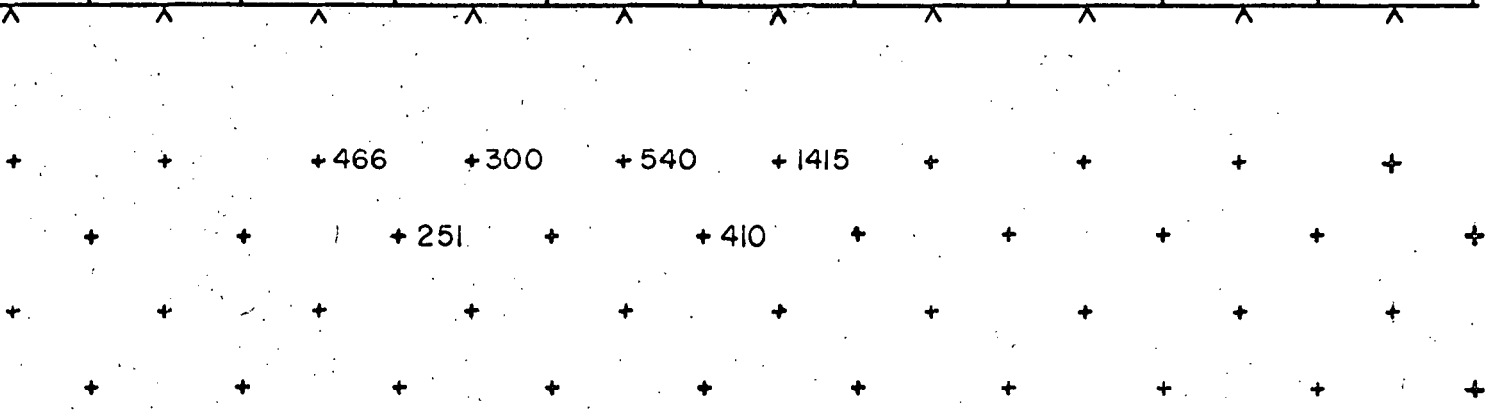
dipole length 400'

line no. 84N

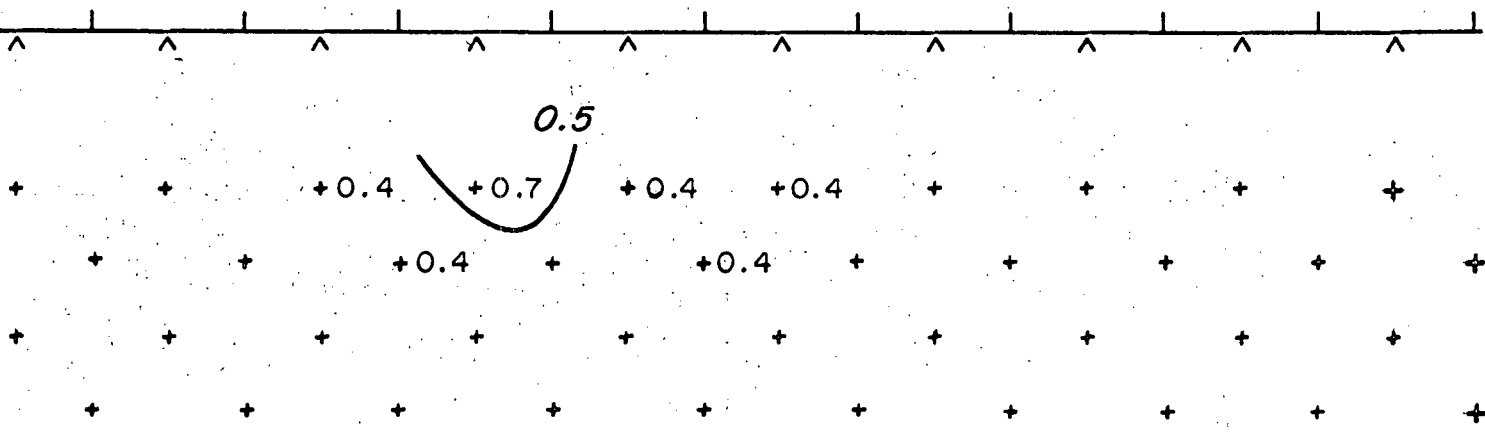
operators _____

bearing _____

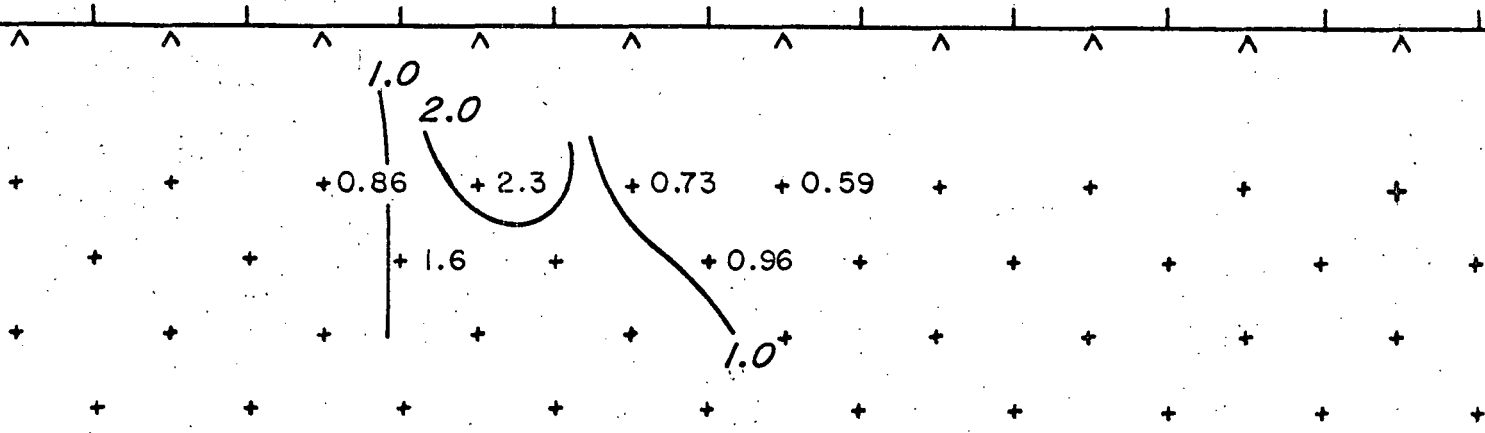
64 68 72 76 80 84 88



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

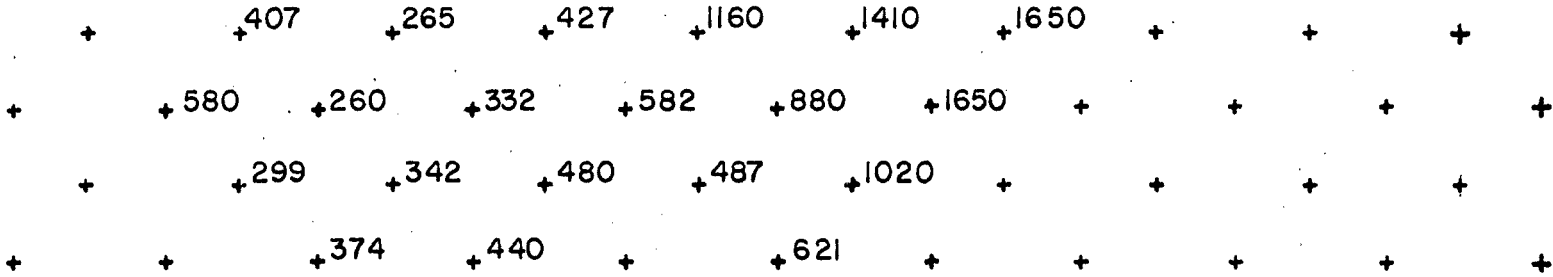
199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

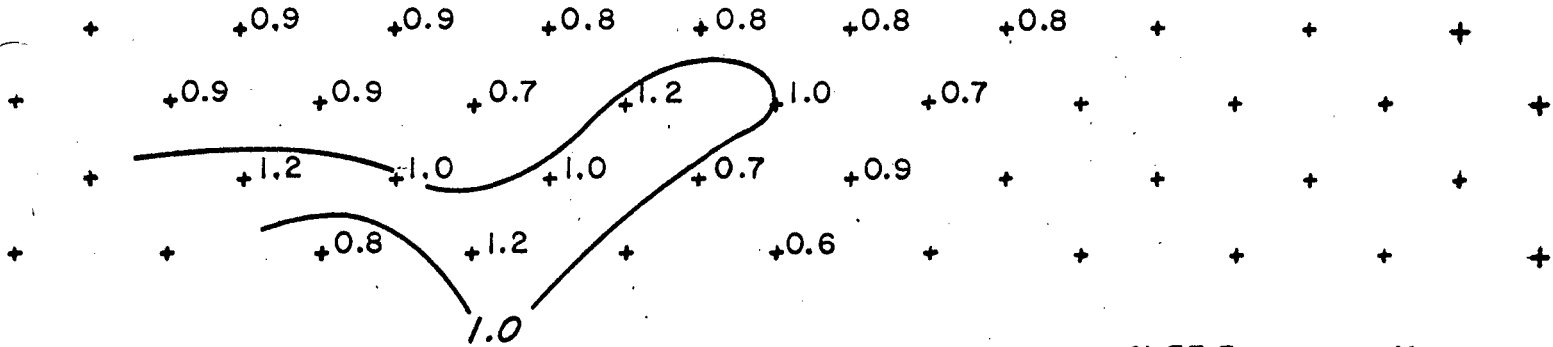
line location LAURA
 frequencies 3 & .3 cps
 dipole length 400' DETAIL
 operators GC/DB

location _____
 map ref. _____
 line no. 88N
 bearing _____

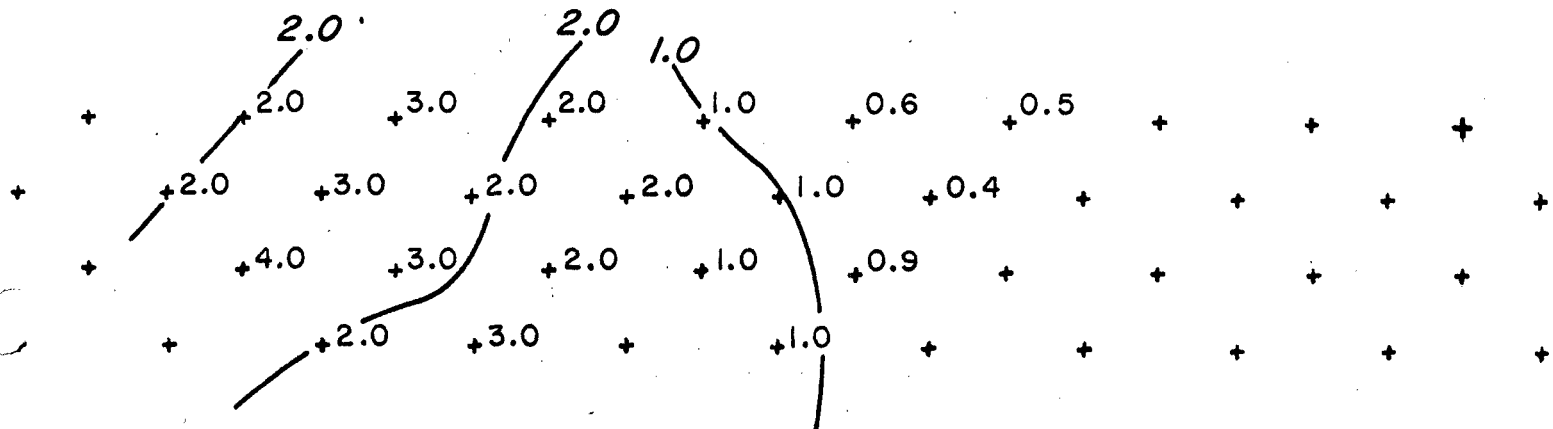
66E 70 74 78 82 86 90 electrode no 96E



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

location B. C. CANADA

frequencies 3.0 & 0.3 cps

map ref. _____

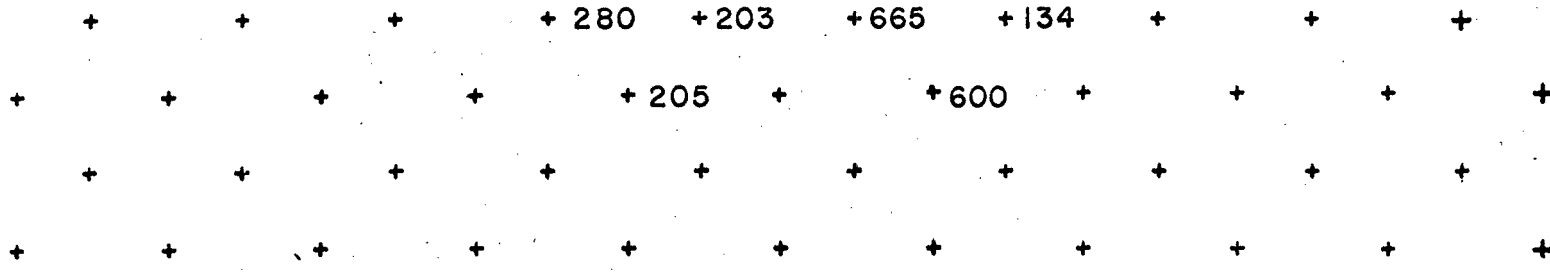
dipole length 400'

line no. 88 N

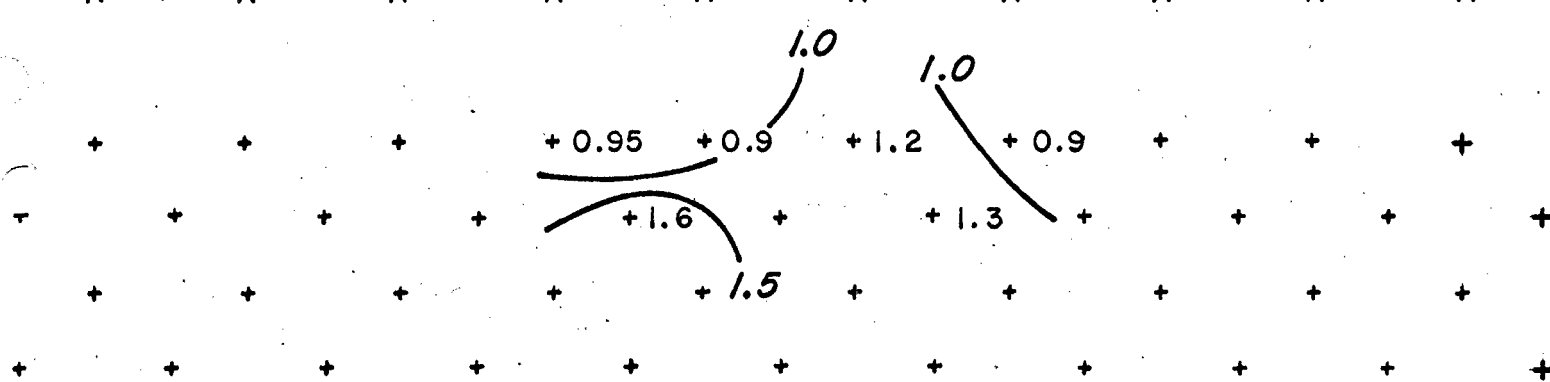
operators _____

bearing _____

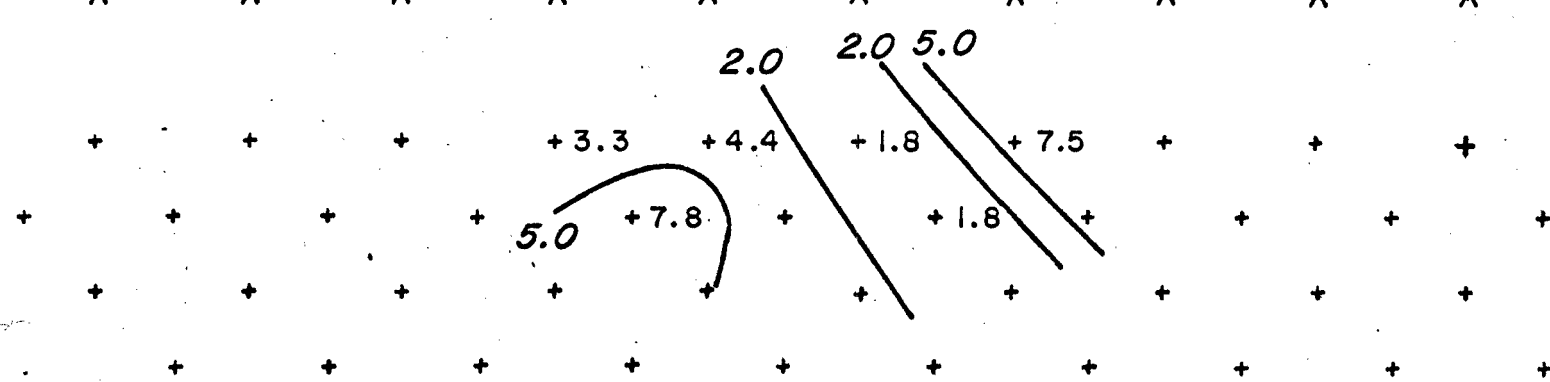
64 68 72 76 80 84 88



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

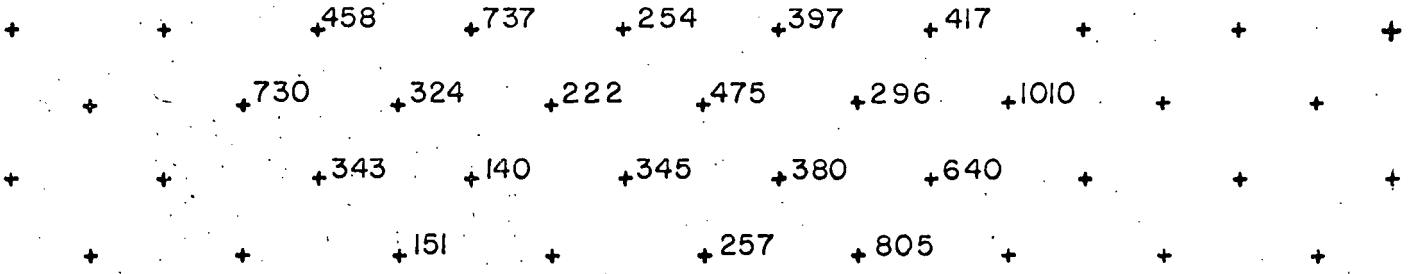
199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

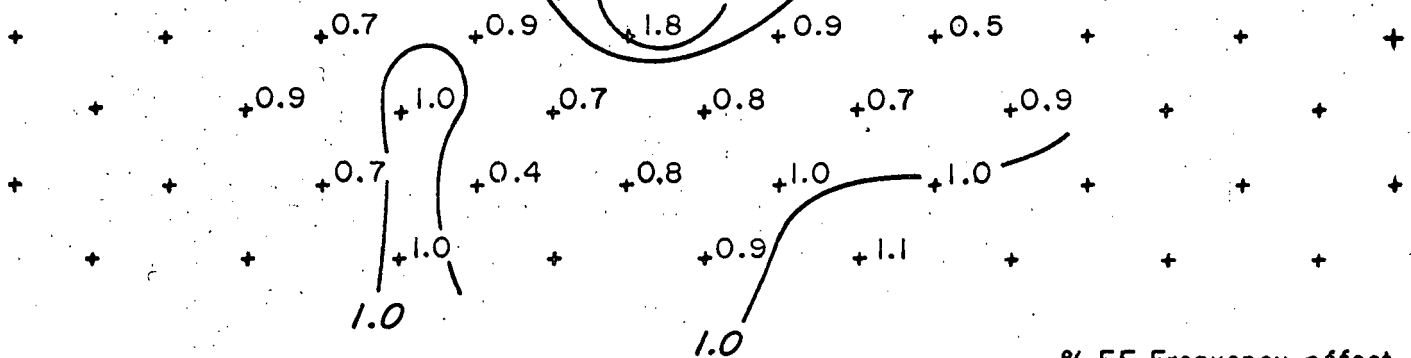
line location LAURA
 frequencies 3 @ .3 cps
 dipole length 400 DETAIL
 operators GC/DB

location _____
 map ref. _____
 line no. 96N
 bearing _____

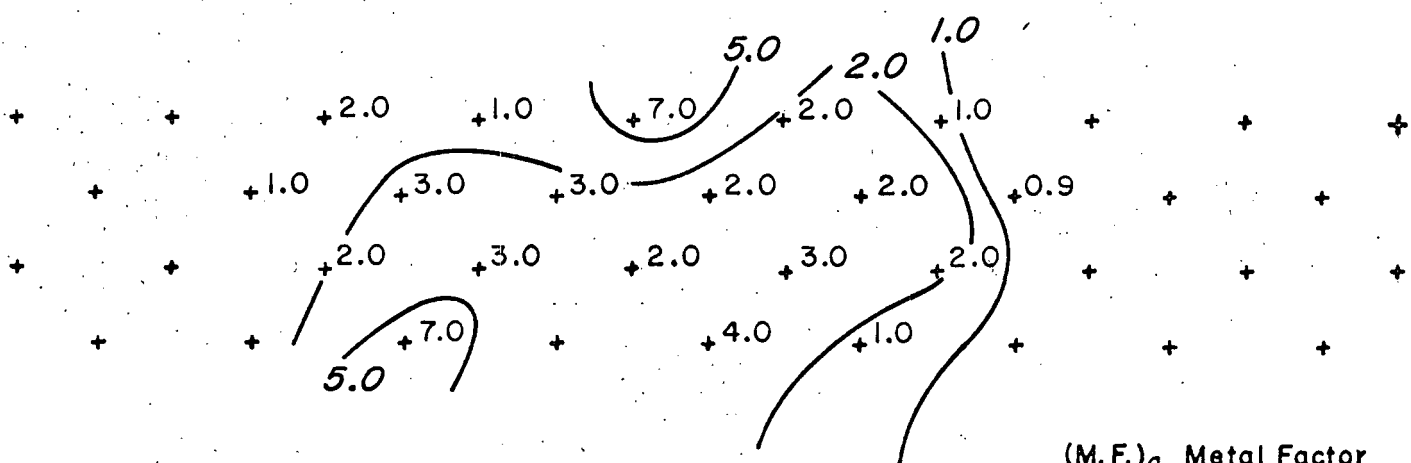
58E 62 66 70 74 78 82 electrode no 90E



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

frequencies 3.0 & 0.3 cps

dipole length 400'

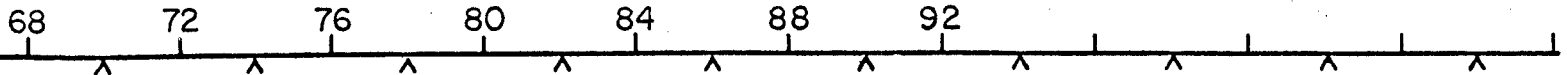
operators _____

location B.C. CANADA

map ref. _____

line no. 96 N

bearing _____



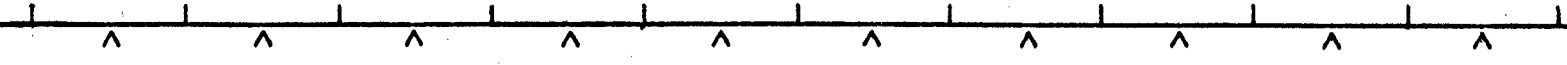
607	+ 285	+ 220	+ 432	+ 1010	+ 625	+	+	+	+	+
+ 138	+	+ 38	+	+ 1070	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+

ρ_a (apparent resistivity)



	+ 0.8	+ 1.6	+ 1.4	+ 1.5	+ 1.5	+	+	+	+	+
+ 1.5	+	+ 1.9	+	+ 1.7	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+

% FE Frequency effect



	+ 1.3	+ 7.3	+ 3.2	+ 1.49	+ 2.4	+	+	+	+	+
+ 10.8	+	+ 5.0	+	+ 1.6	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location LAURA MINES, HIGHLAND VAL.
 frequencies 3.0 & 0.3 cps
 dipole length 400'
 operators _____

location B.C. CANADA date _____
 map ref. _____
 line no. 104 N
 bearing _____

88 92 96 100 104 108 112 116 120 124

903 + 1525 + 894 + 531 + 676 + 547 + 381 + 1255 + 423 + 503 +

+ 788 + + 586 + + 795 + + 588 + + 404 + +

+ + + + + + + + + +

ρ_a (apparent resistivity)

0.5 + 0.5 + 0.2 + 0.5 + 0.3 + 0.5 + 0 + 0.9 + 0.4 + 0.7 +

+ 0.6 + + 0.5 + + 0.3 + + 0.5 + + 0.4 + +

+ + + + + + + + + +

% FE Frequency effect

0.55 + 0.33 + 0.22 + 0.94 + 0.44 + 0.91 + 0 + 0.72 + 0.95 + 1.4 +

+ 0.76 + + 0.85 + + 0.38 + + 0.85 + + 0.99 + +

+ + + + + + + + + +

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

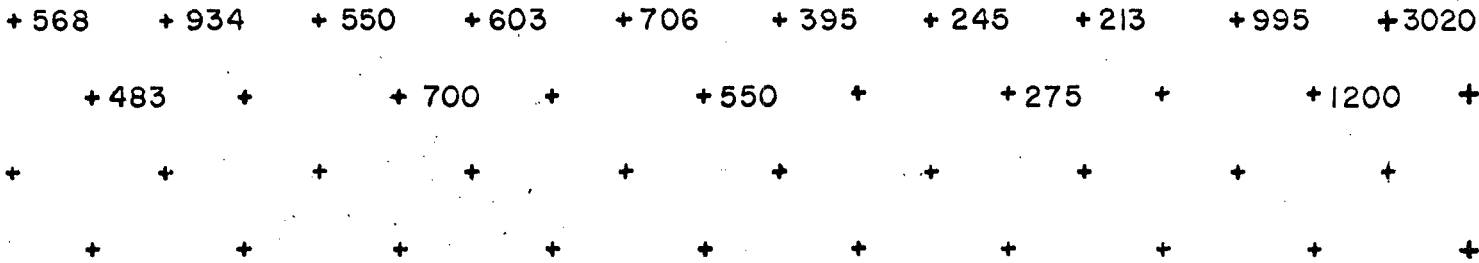
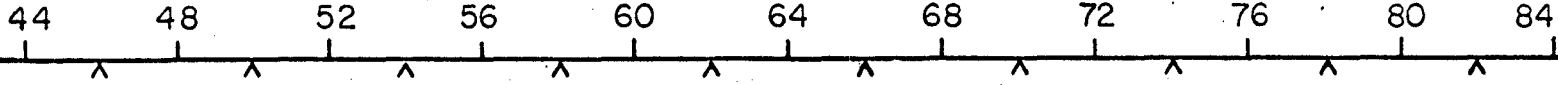
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

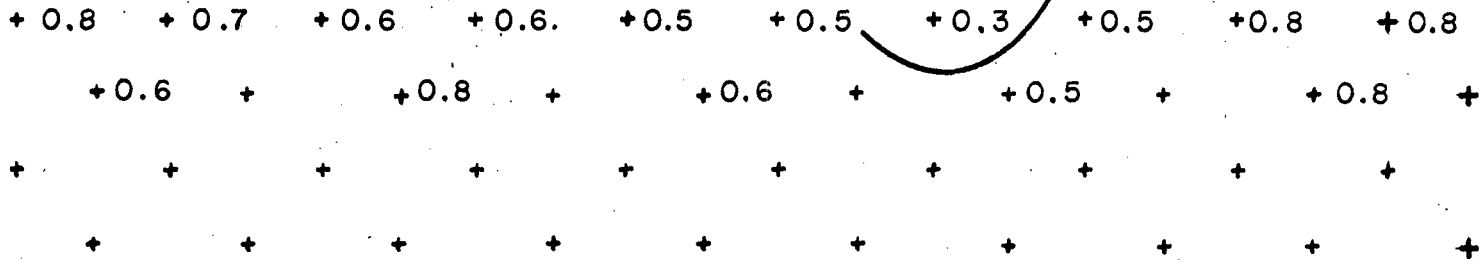
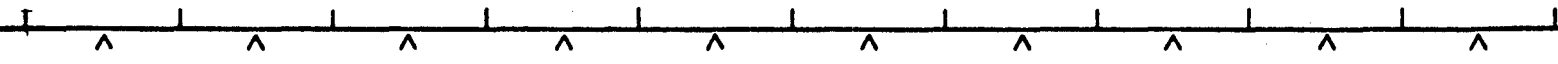
199 BENT STREET, CAMBRIDGE, MASS, 02141

line location LAURA MINES, HIGHLAND VAL
 frequencies 3.0 & 0.3 cps
 dipole length 400'
 operators _____

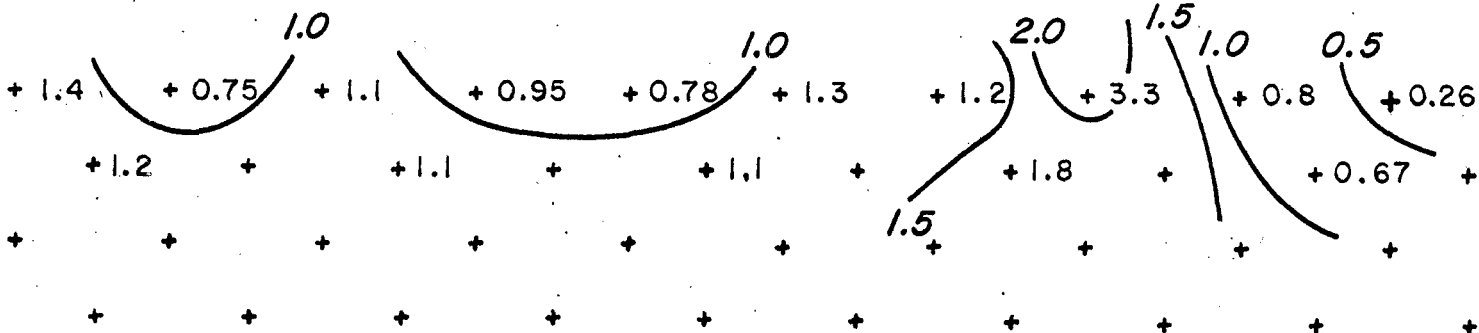
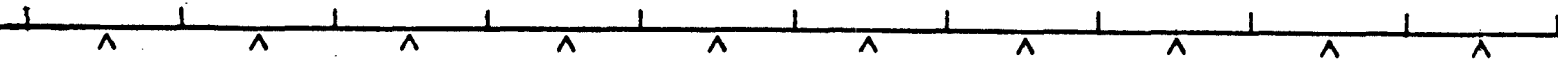
location B.C. CANADA date _____
 map ref. _____
 line no. 104 N
 bearing _____



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

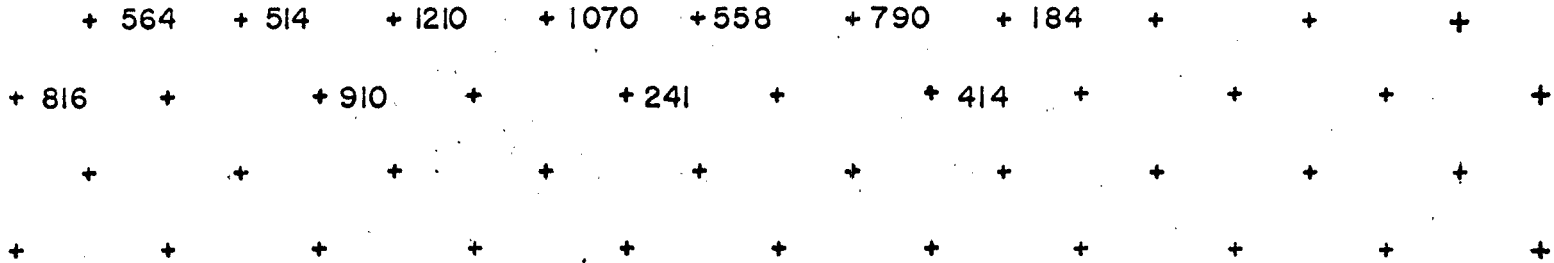
INDUCED POLARIZATION SURVEY

Geoscience Incorporated

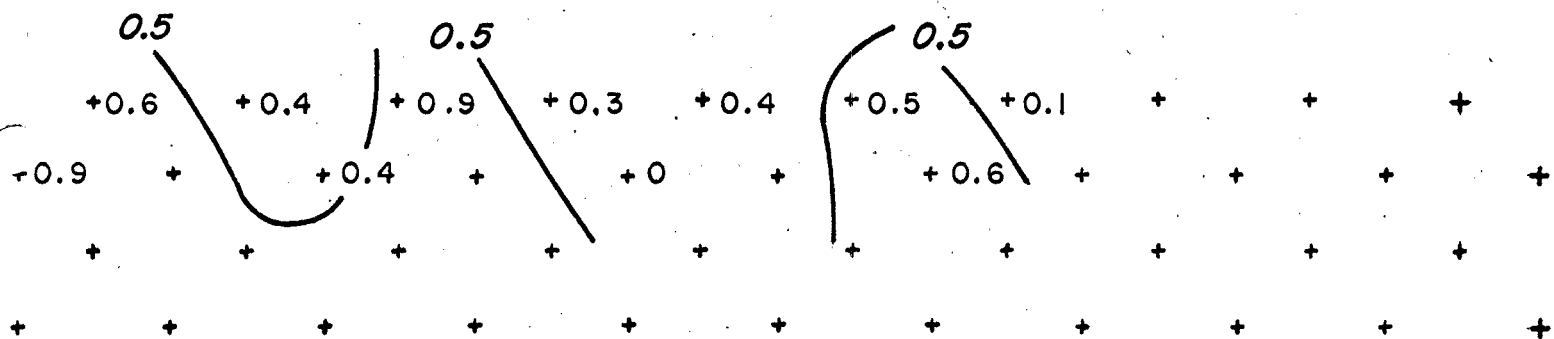
199 BENT STREET, CAMBRIDGE, MASS, 02141

line location LAURA MINES, HIGHLAND VAL. location B.C. CANADA date _____
 frequencies 3.0 & 0.3 cps map ref. _____
 dipole length 400' line no. 112N
 operators _____ bearing _____

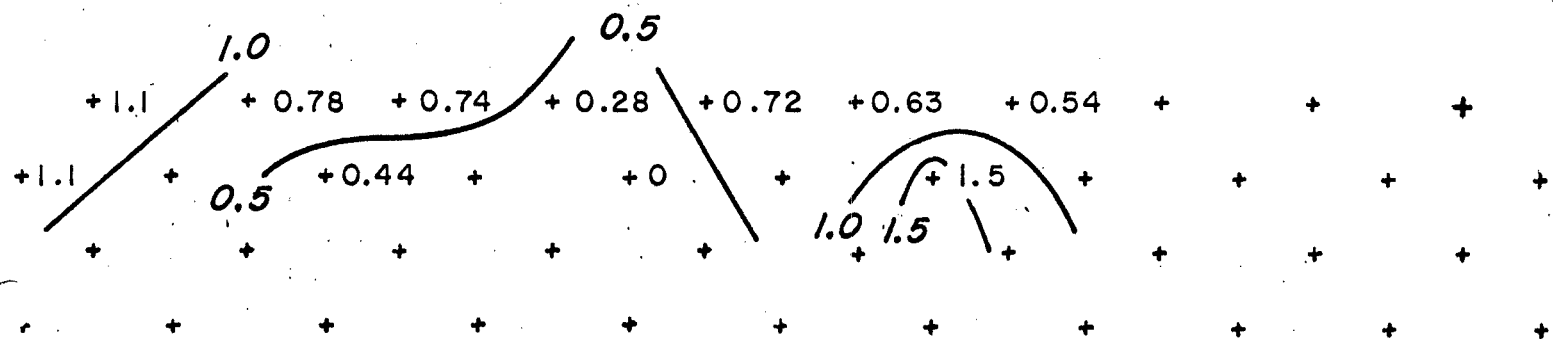
96 100 104 108 112 116 120 124



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

location B.C. CANADA

frequencies 3.0 & 0.3 cps

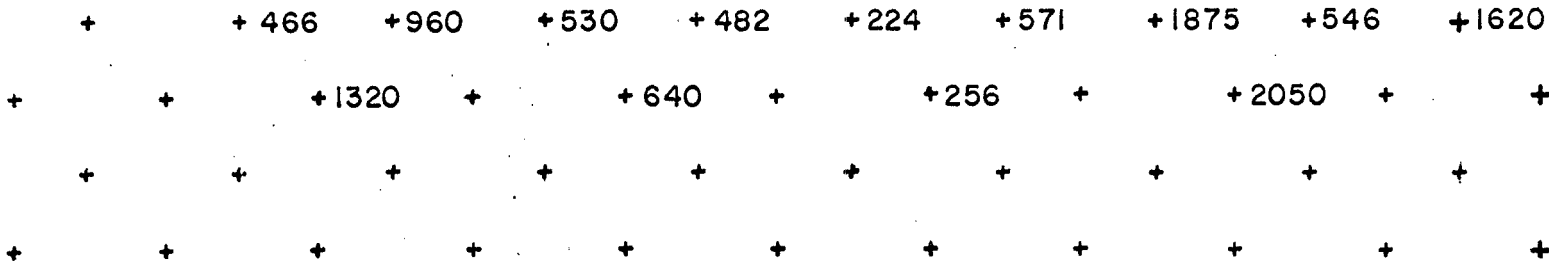
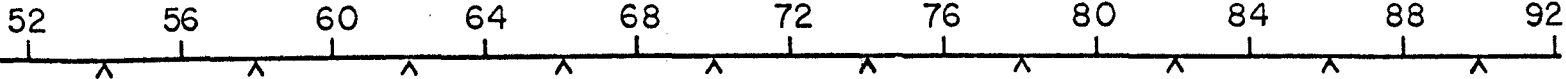
map ref. _____

dipole length 400'

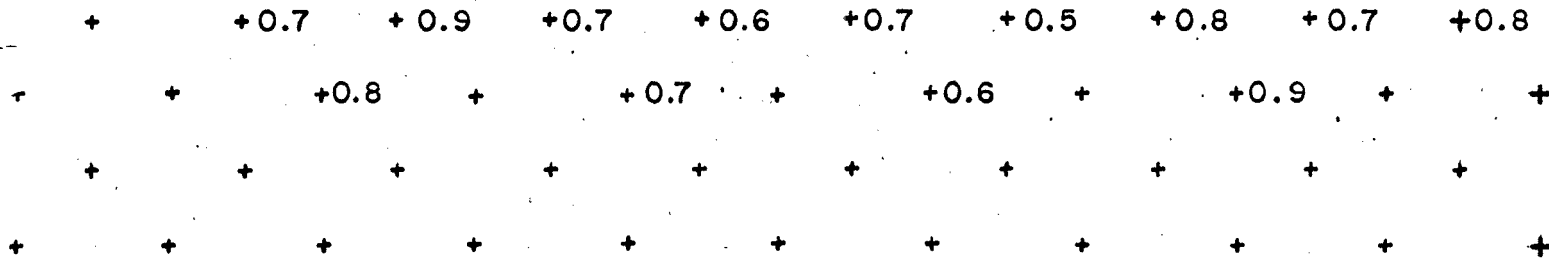
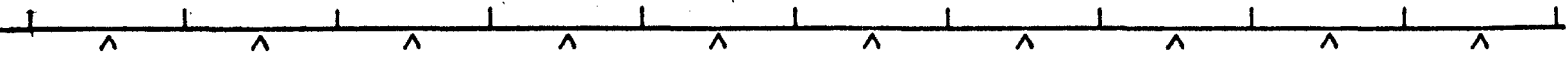
line no. 112N

operators _____

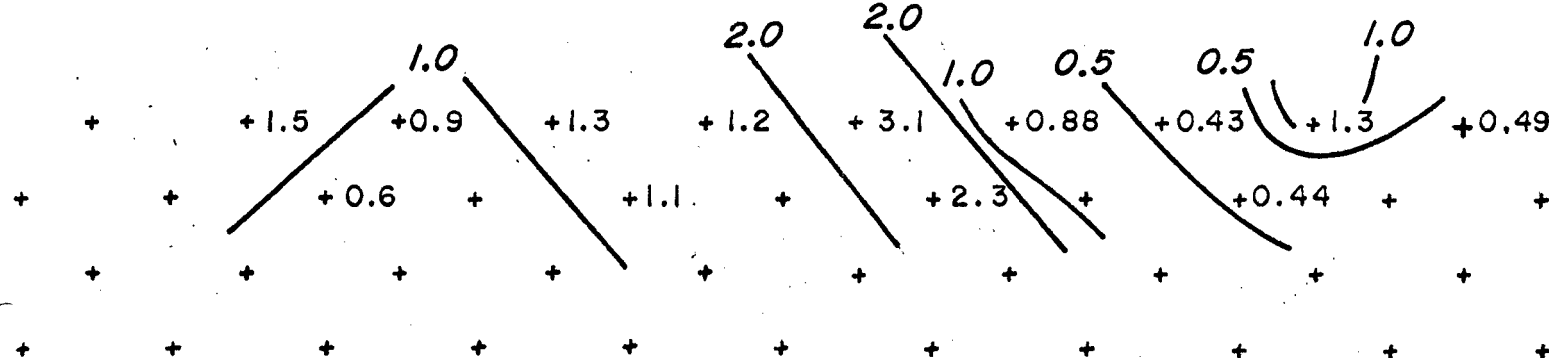
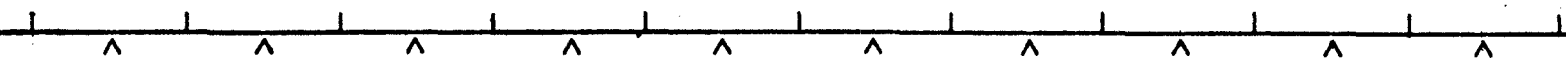
bearing _____



R_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

line location LAURA MINES, HIGHLAND VAL.
 frequencies 3.0 & 0.3 cps
 dipole length 400'
 operators _____

location B.C. CANADA date _____
 map ref. _____
 line no. 120 N
 bearing _____

52 56 60 64 68 72 76 80 84 88

+	+	+720	+705	+669	+545	+454	+478	+1811	+1295
+	+	+795	+	+728	+	+662	+	+1490	+
+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+

ρ_a (apparent resistivity)

52 56 60 64 68 72 76 80 84 88

+	+	+0.4	+0.8	+0.9	+0.5	+0.4	+0.5	+0.9	+0.7
+	+	+0.5	+	+0.8	+	+0.8	+	+0.7	+
+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+

% FE Frequency effect

52 56 60 64 68 72 76 80 84 88

+	+	+0.55	+1.0	+1.3	+0.93	+0.88	+1.0	+0.66	+0.54
+	+	+0.63	+	+1.1	+	+1.2	+	+0.47	+
+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA MINES, HIGHLAND VAL.

location B.C. CANADA

frequencies 3.0 & 0.3 cps

map ref. _____

dipole length 400'

line no. 120 N

operators _____

bearing _____

92 96 100 104 108 112 116 120 124

+ 2710 + 480 + 433 + 990 + 550 + 1198 + 1080 + 653 + +

+ + 2860 + + 368 + + 1330 + + 582 + + +

+ + + + + + + + + +

+ + + + + + + + + +

ρ_a (apparent resistivity)

+ 0.8 + 0.4 + 0.2 + 0.7 + 0.6 + 0.7 + 0.7 + 0.6 + +

+ + 1.0 + + 0.5 + + 0.6 + + 0.8 + + +

+ + + + + + + + + +

+ + + + + + + + + +

% FE Frequency effect

+ 0.31 + 0.83 + 0.46 + 0.71 + 1.1 + 0.58 + 0.65 + 0.92 + +

+ + 0.35 + + 1.4 + + 0.45 + + 1.4 + + +

+ + + + + + + + + +

+ + + + + + + + + +

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

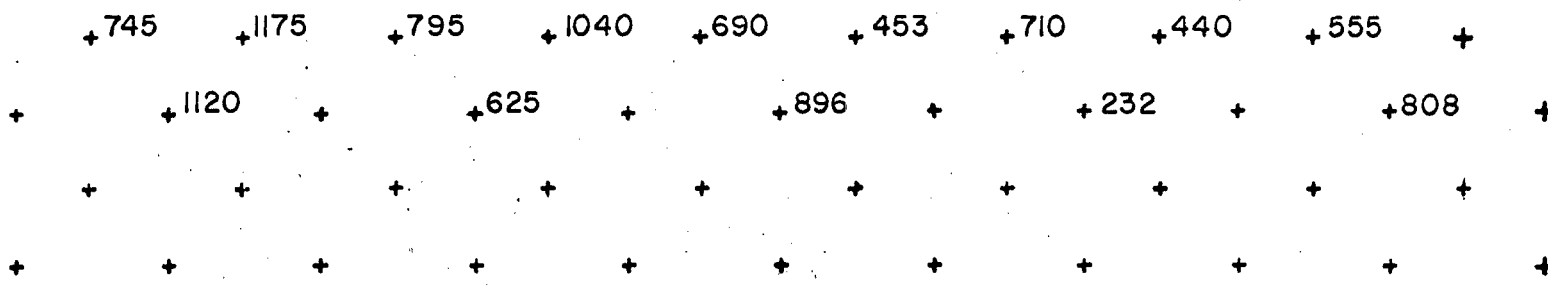
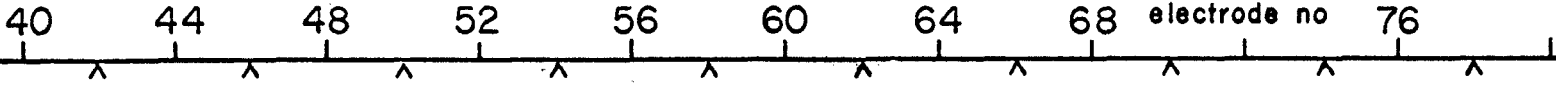
Geoscience Incorporated

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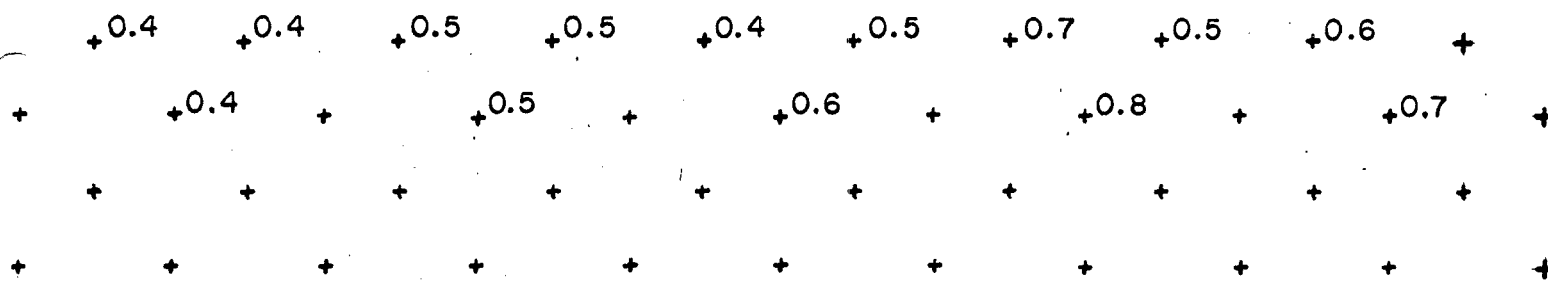
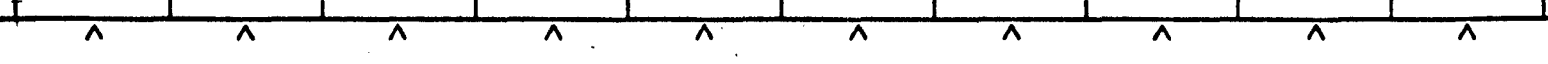
date 8/4/69

line location LAURA
frequencies 3 & .3 cps
dipole length 400'
operators _____

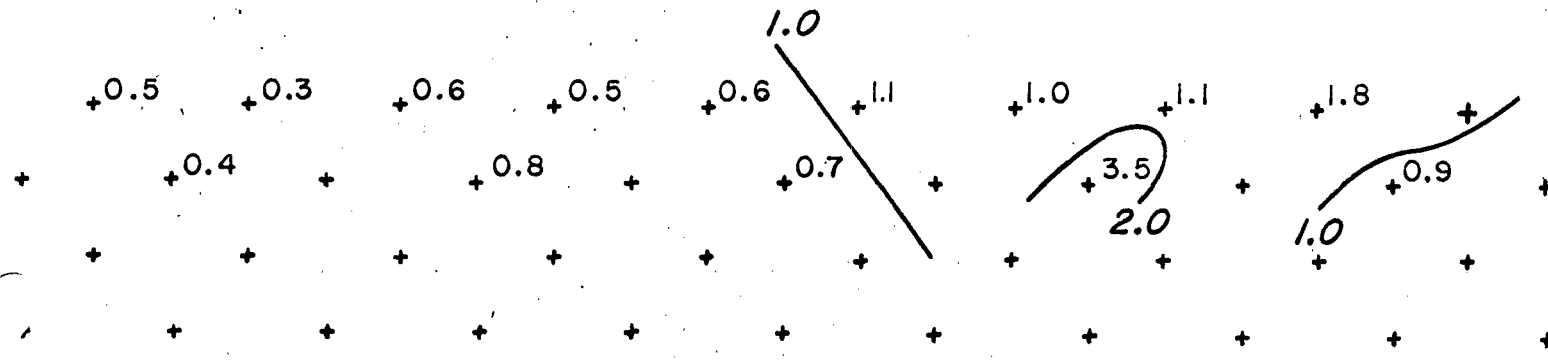
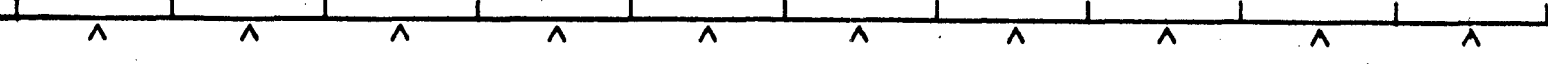
location _____
map ref. _____
line no. 128N
bearing _____



R_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/4/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400
 operators _____

location _____
 map ref. _____
 line no. 128N
 bearing _____

76 80 84 88 92 96 100 104 electrode no 112

+316 +865 +934 +4290 +1045 +592 +950 +566 +772 +

+ + +1100 + +2060 + +999 + +730 + +

+ + + + + + + + + + +

+ + + + + + + + + + +

ρ_a (apparent resistivity)

+1.1 +0.6 +0.7 +1.1 +0.6 +0.6 +0.9 +0.7 +0.8 +

+ + +0.9 + +0.8 + +0.6 + +0.8 + +

+ + + + + + + + + + +

+ + + + + + + + + + +

% FE Frequency effect

+3.5 +0.7 +0.8 +0.3 +0.6 +1.0 +1.0 +1.2 +1.0 +

+ + +0.8 + +0.4 + +0.6 + +1.1 + +

+ + + + + + + + + + +

+ + + + + + + + + + +

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

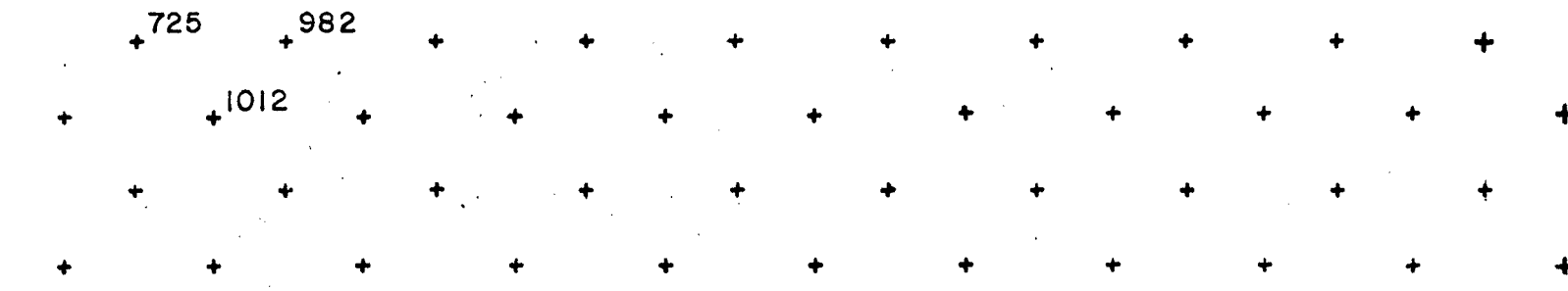
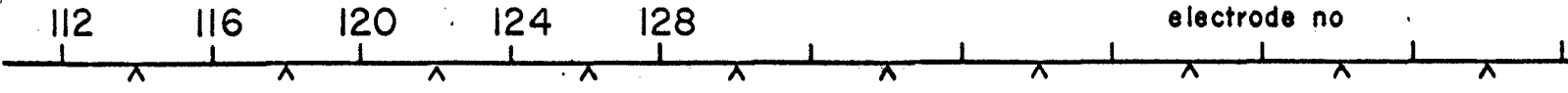
Geoscience Incorporated

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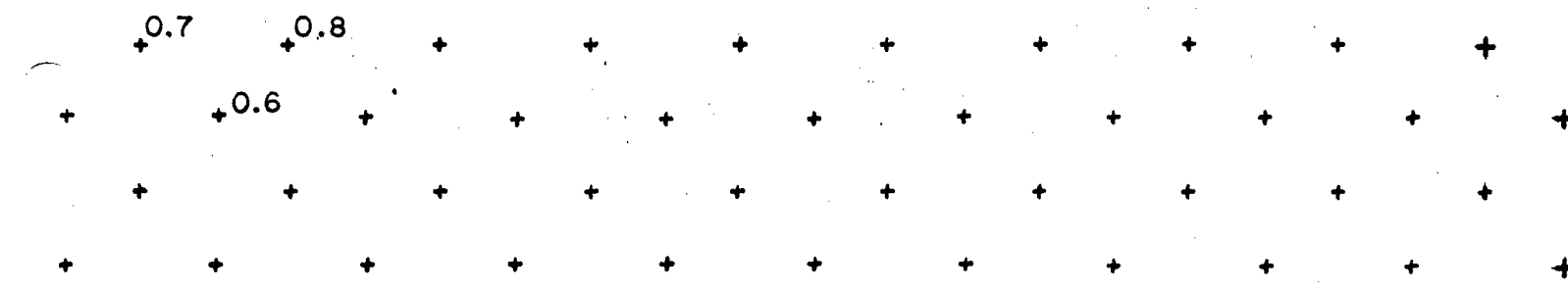
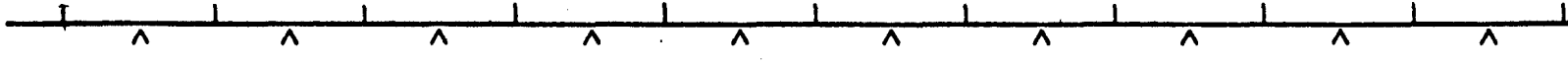
date 8/4/69

line location LAURA
frequencies 3 8 .3 cps
dipole length 400'
operators _____

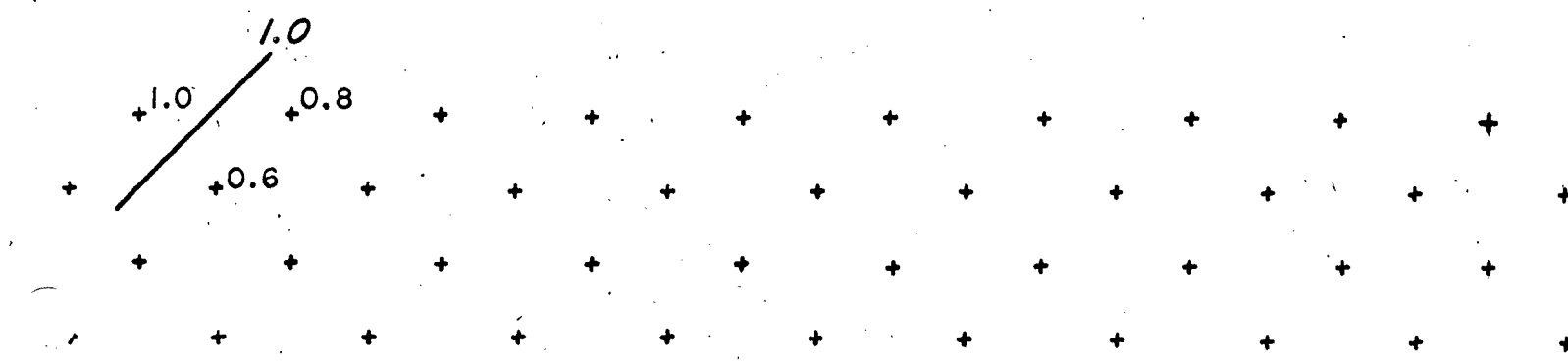
location _____
map ref. _____
line no. 128 N
bearing _____



R_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

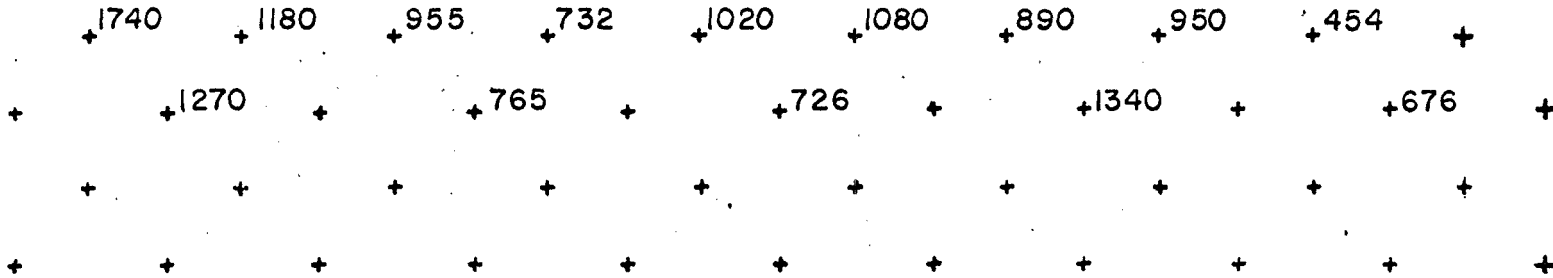
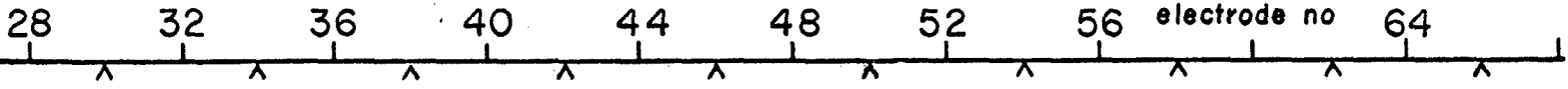
Geoscience Incorporated

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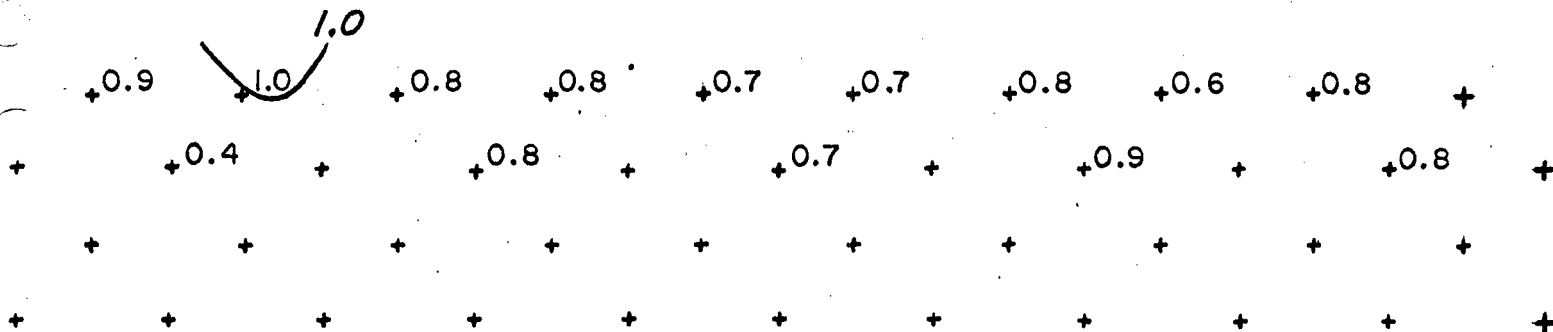
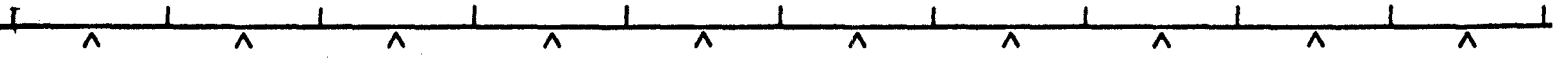
date 8/4/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400
 operators _____

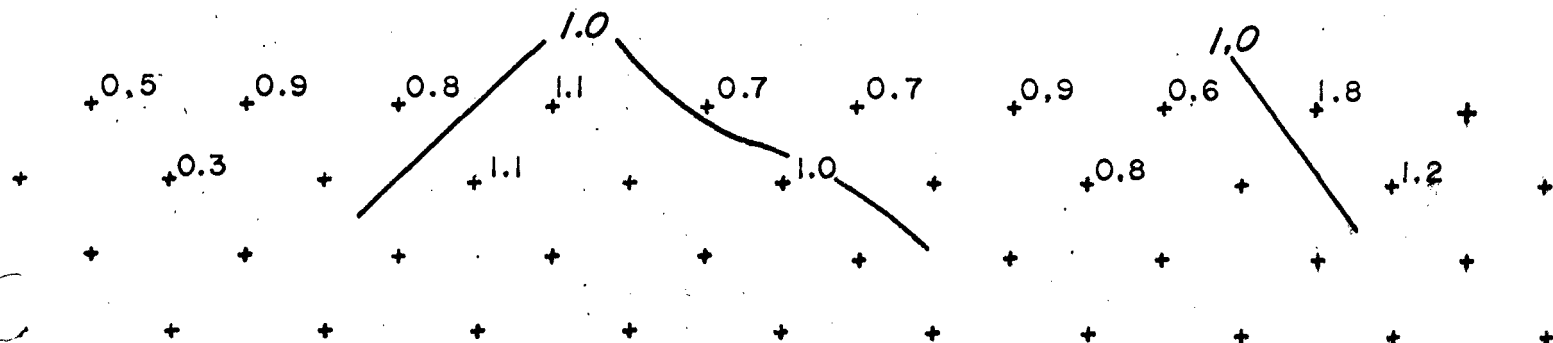
location _____
 map ref. _____
 line no. 136N
 bearing _____



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

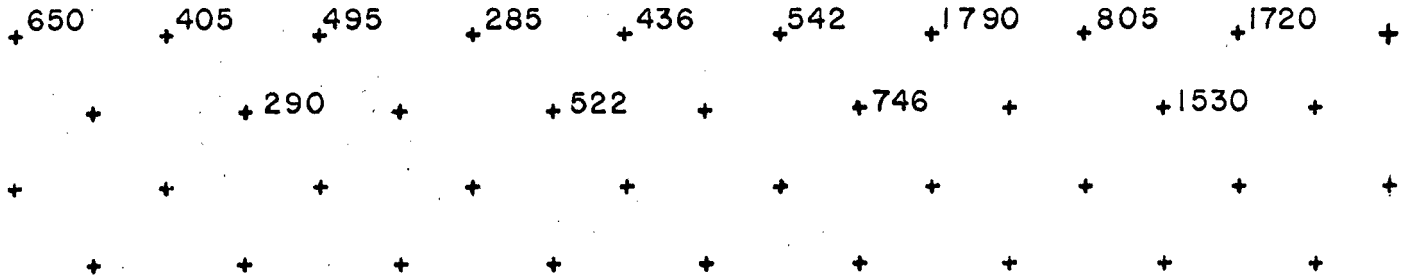
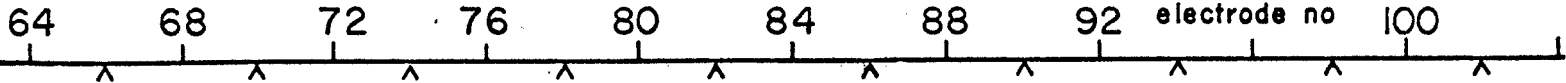
Geoscience Incorporated

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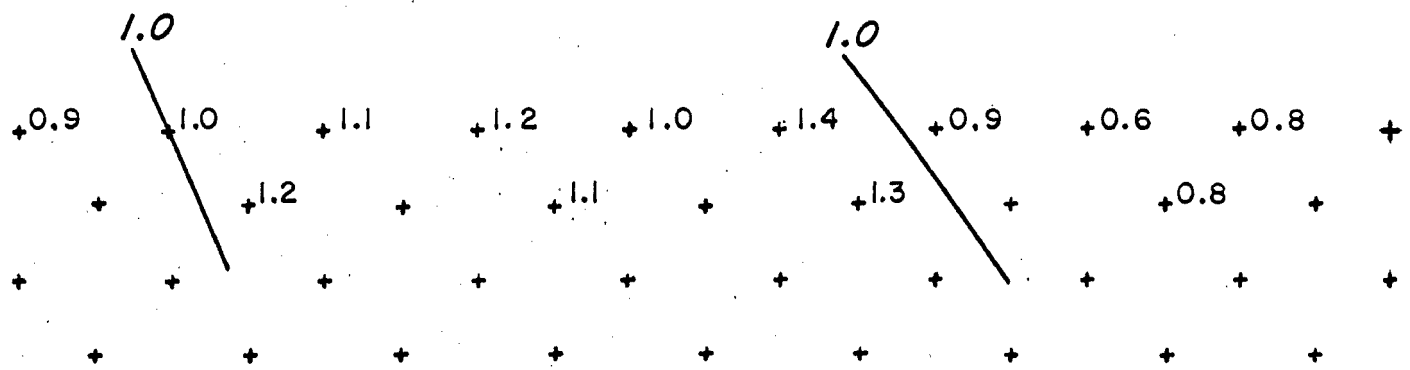
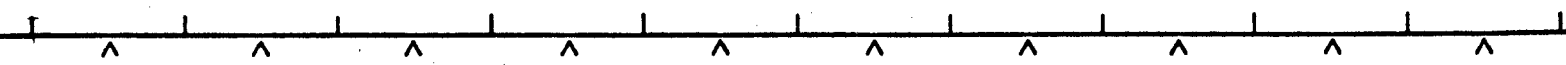
date 8/7/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400
 operators _____

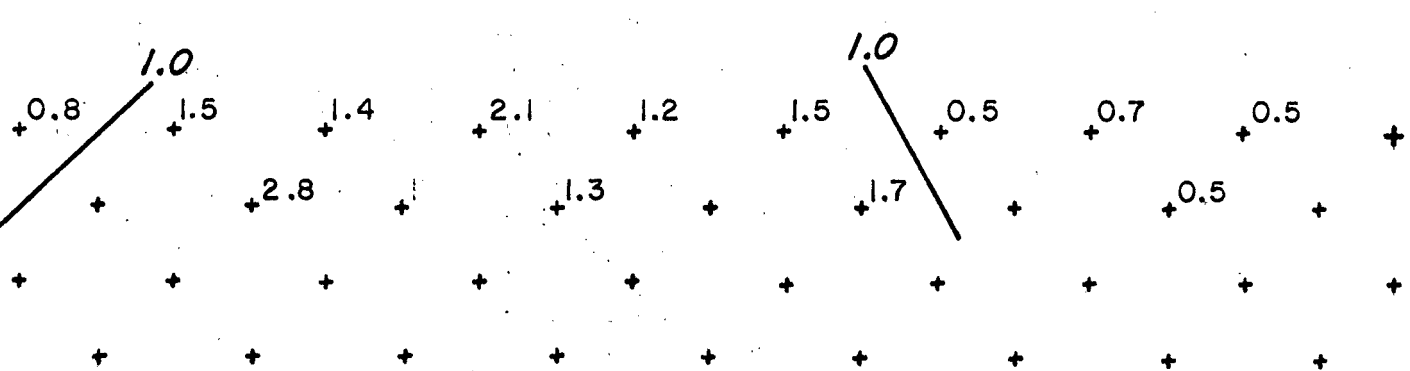
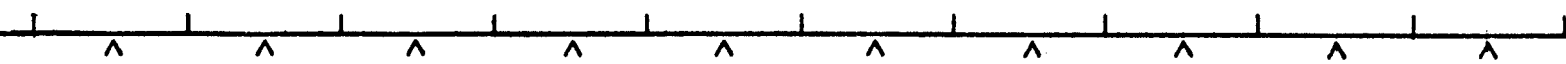
location _____
 map ref. _____
 line no. 136N
 bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

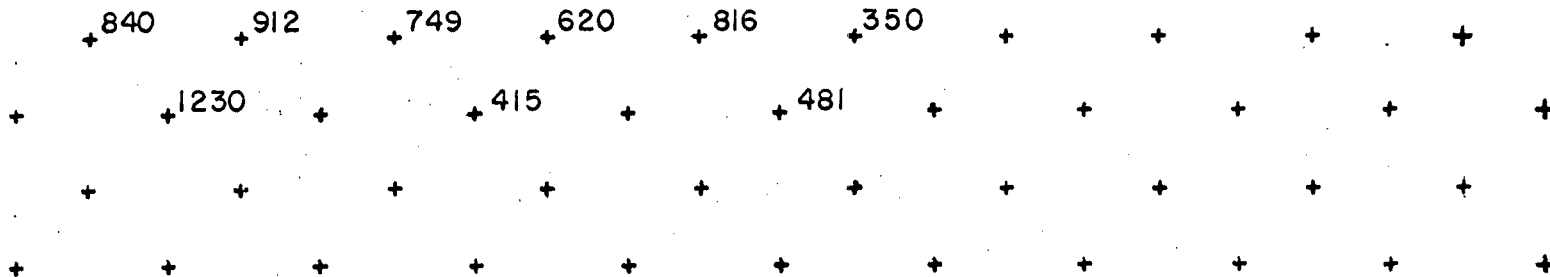
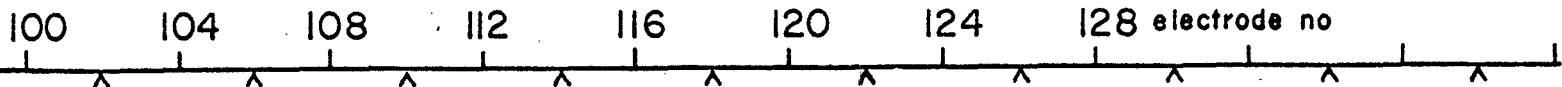
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

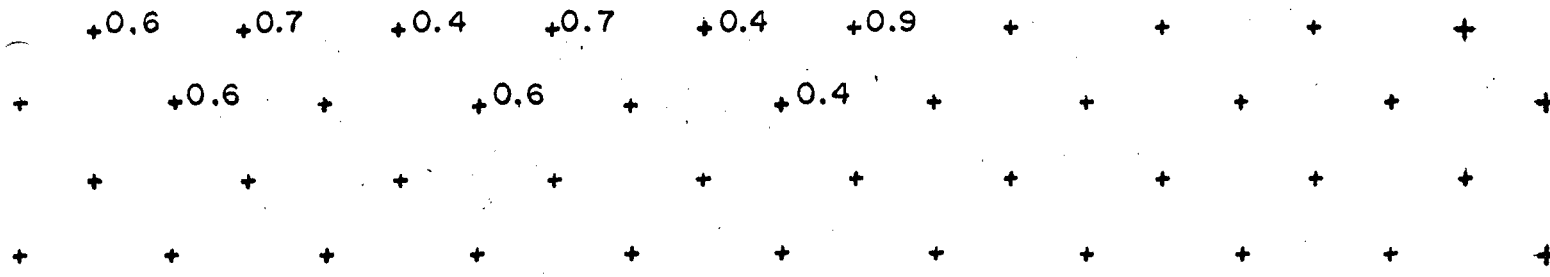
date 8/7/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400'
 operators _____

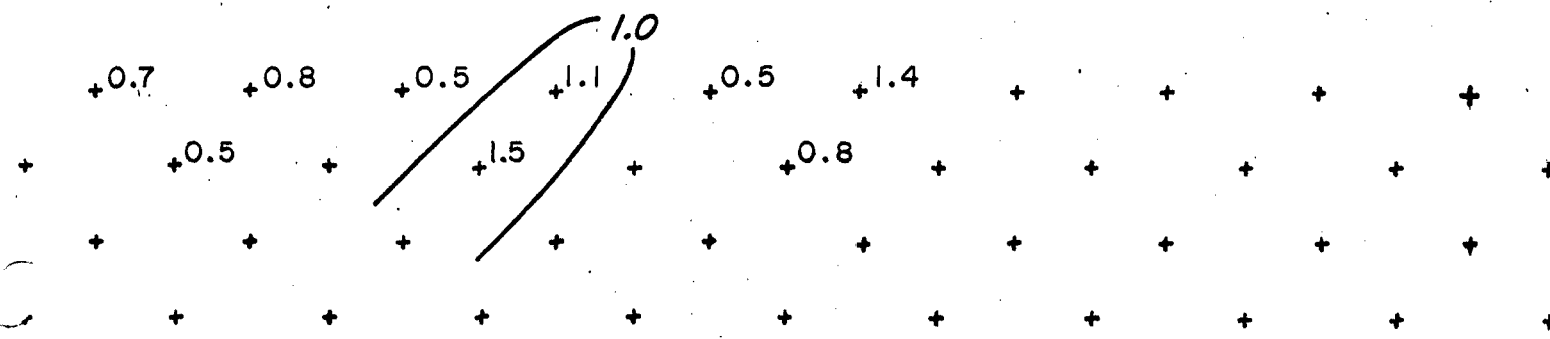
location _____
 map ref. _____
 line no. 136N
 bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

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199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/8/69

line location LAURA
 frequencies 3 8.3 cps
 dipole length 400
 operators _____

location _____
 map ref. _____
 line no. 144N
 bearing _____

28 32 36 40 44 48 52 56 electrode no 64

+	282	+	605	+	605	+	568	+	482	+	930	+	755	+	654	+	516	+
+	488	+		+	715	+		+	470	+		+	965	+		+	546	+

ρ_a (apparent resistivity)

+	1.2	+	0.9	+	1.2	+	1.2	+	1.5	+	1.5	+	0.9	+	0.9	+	0.8	+	0.6	+
+	0.9	+		+	1.0	+		+	1.5	+	1.5	+	1.0	+		+		+	0.7	+

% FE Frequency effect

+	4.3	+	1.5	+	2.0	+	2.1	+	3.1	+	1.0	+	1.2	+	1.2	+	1.2	+		+
+	1.8	+		+	1.4	+		+	3.2	+		+	1.0	+		+		+	1.3	+

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

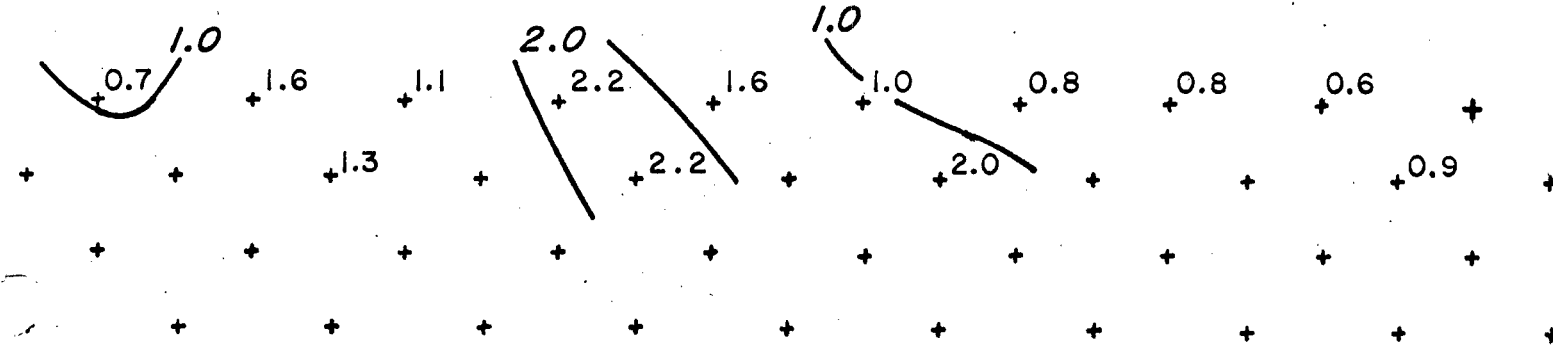
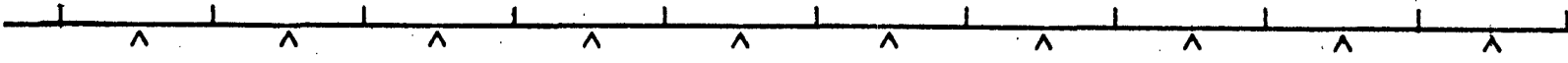
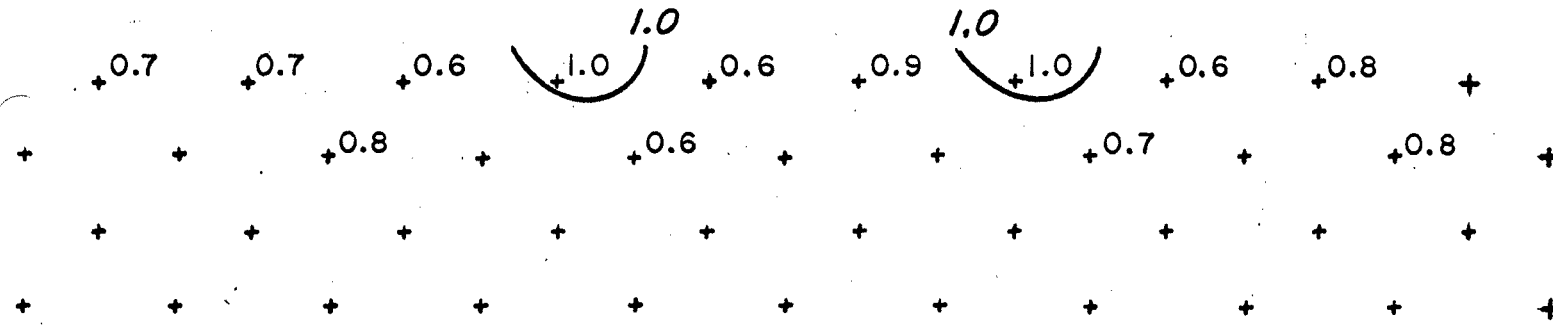
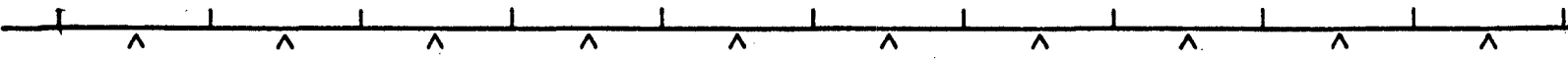
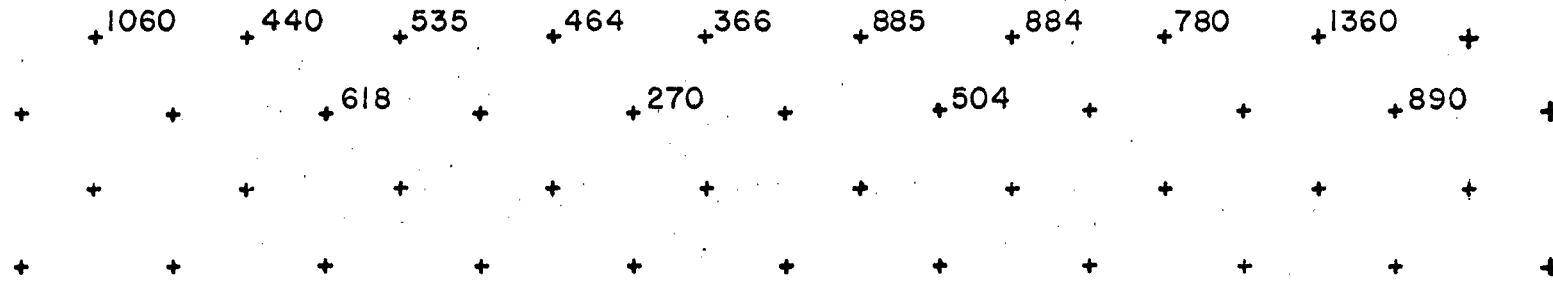
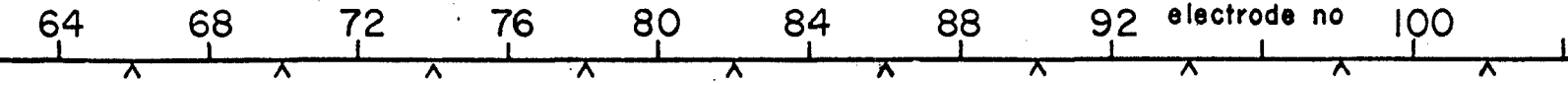
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/7/69

line location LAURA
 frequencies 3 & 3 cps
 dipole length 400
 operators _____

location _____
 map ref. _____
 line no. 144N
 bearing _____



continued from sheet _____ on sheet _____

(M.F.)_a Metal Factor

INDUCED POLARIZATION SURVEY

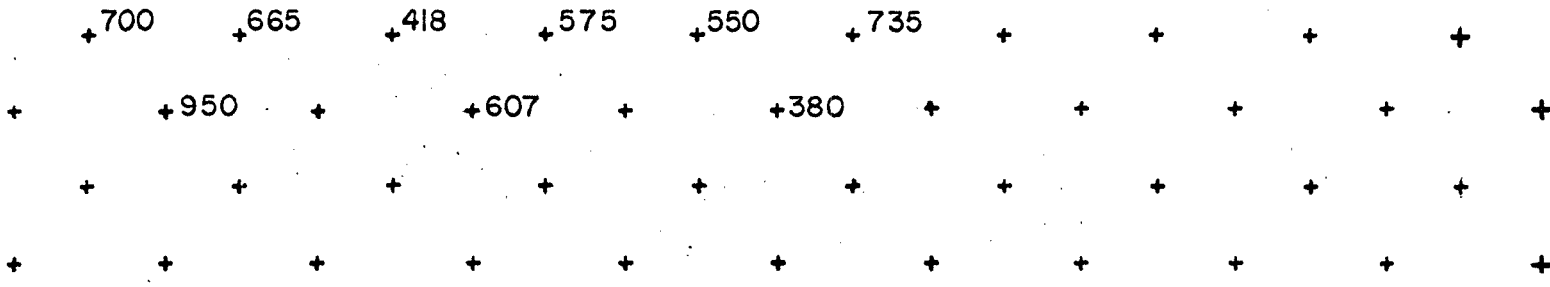
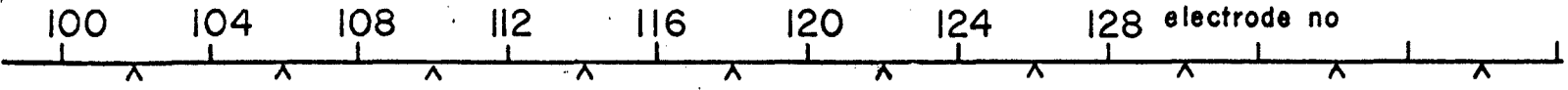
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

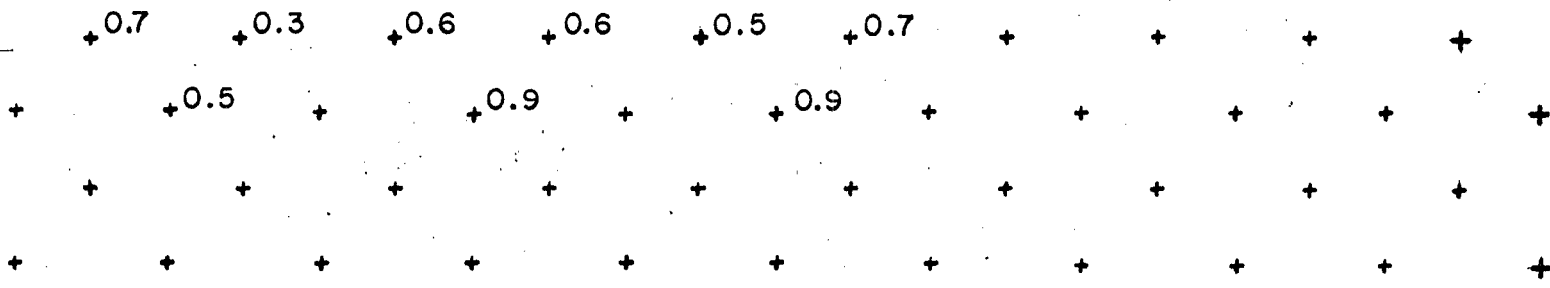
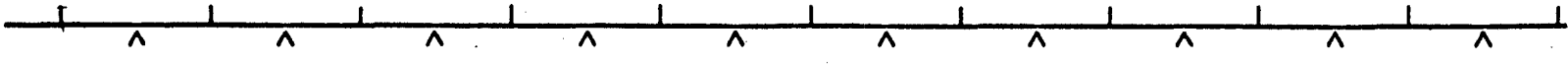
date 8/7/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400'
 operators _____

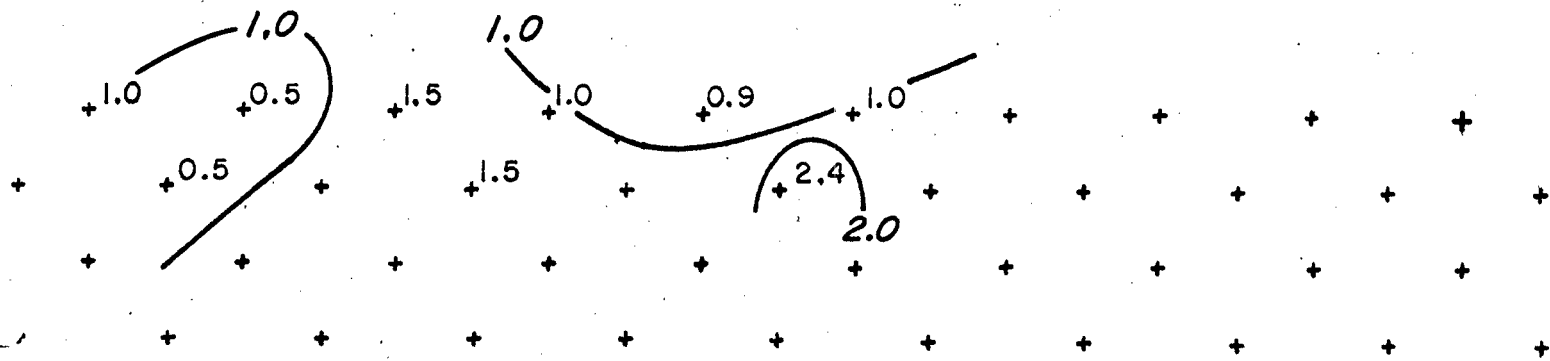
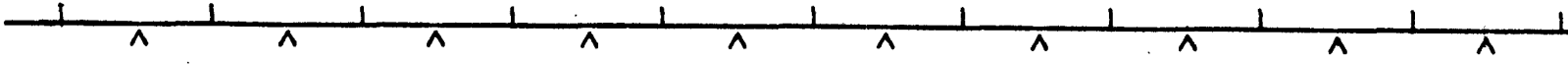
location _____
 map ref. _____
 line no. 144 N
 bearing _____



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

line location LAURA

location _____

frequencies 3 & .3 cps

map ref. _____

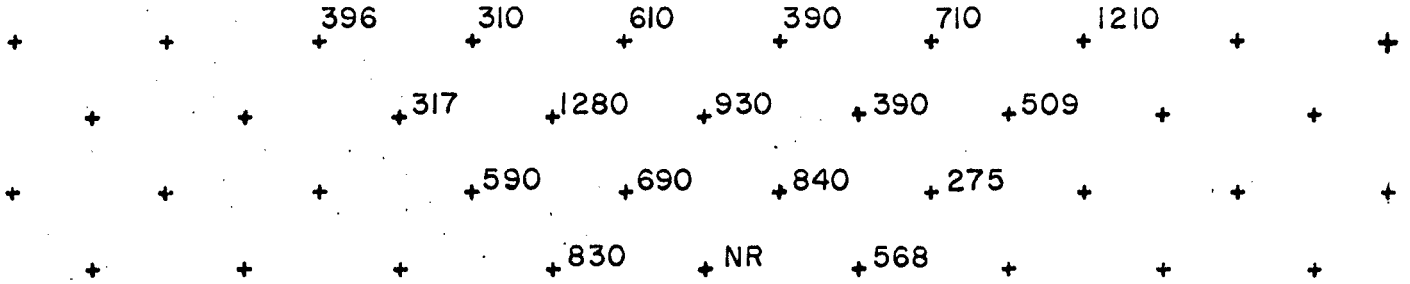
dipole length 400' DETAIL

line no. 148 N

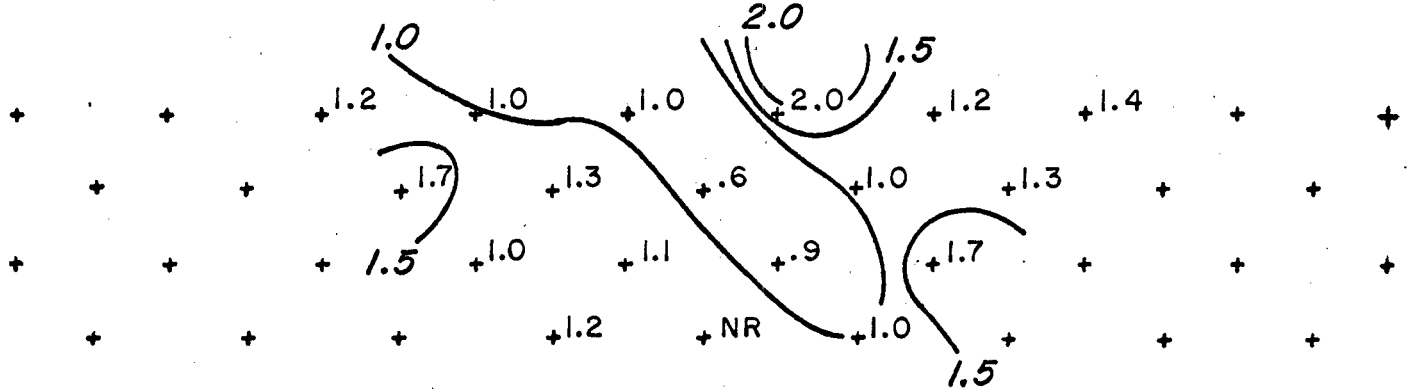
operators GC/DB

bearing _____

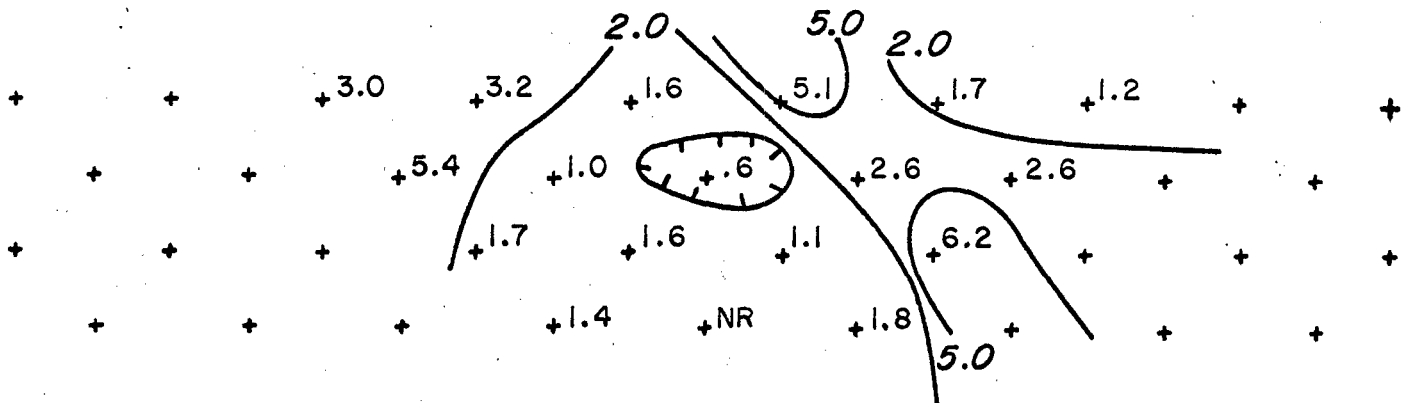
30E 34 38 42 46 50 54 electrode no 62E



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

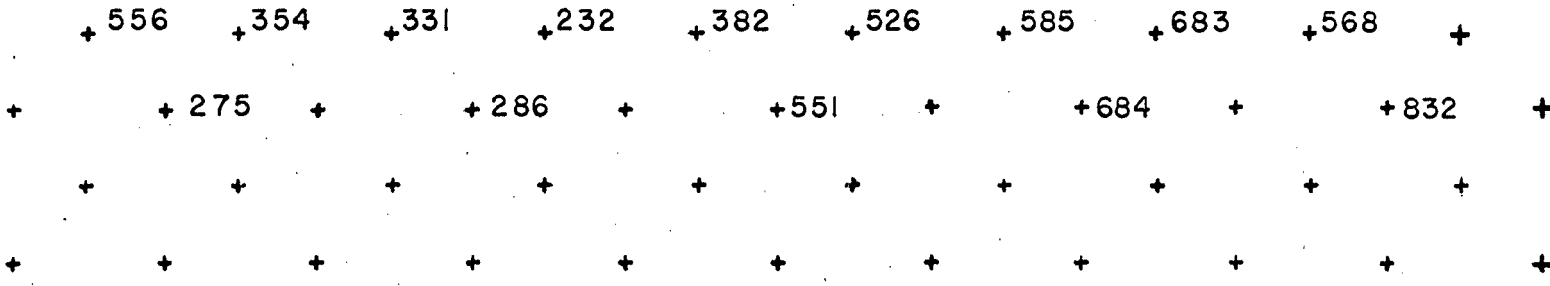
199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/9/69

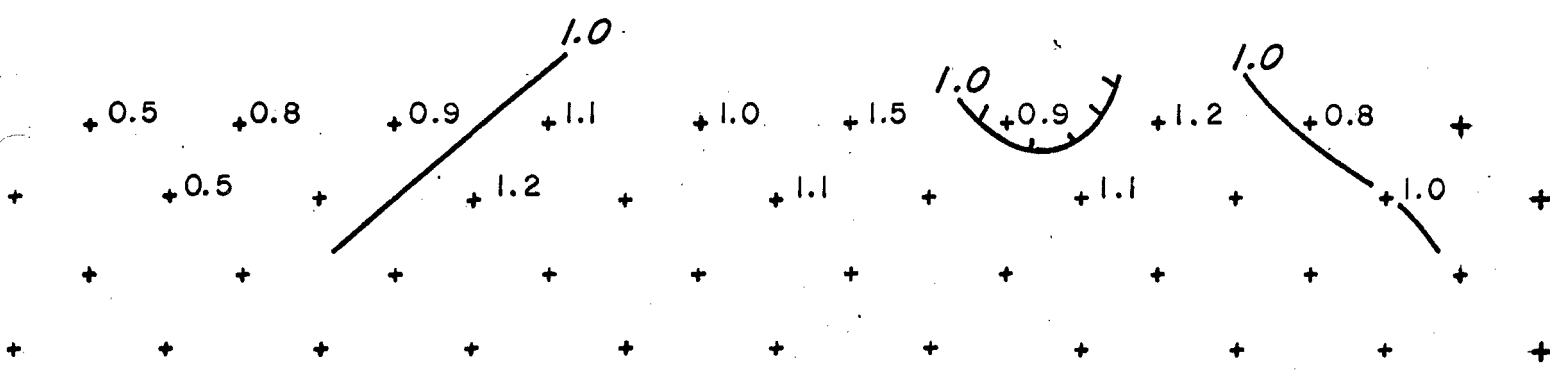
line location LAURA
 frequencies 3 & .3 cps
 dipole length 400
 operators _____

location _____
 map ref. _____
 line no. 152 N
 bearing _____

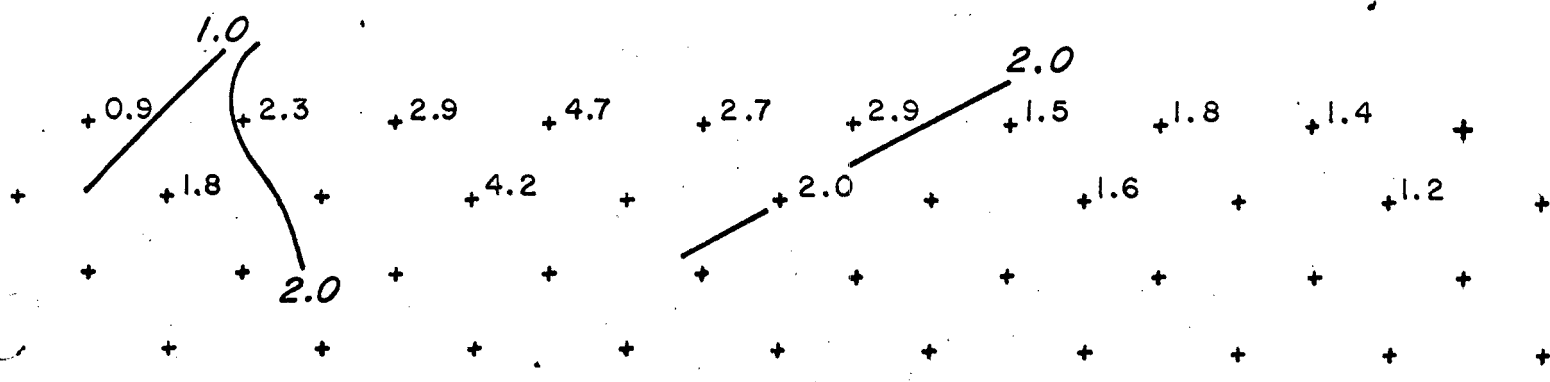
28 32 36 40 44 48 52 56 electrode no 64



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

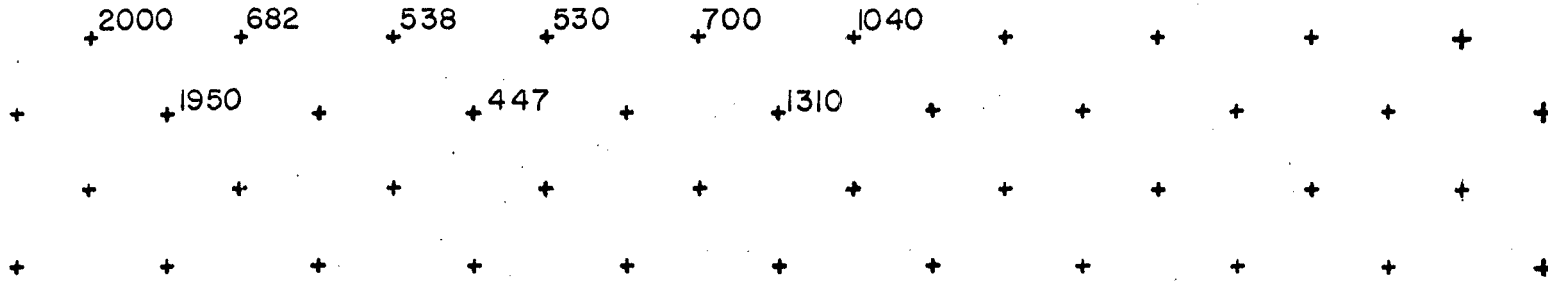
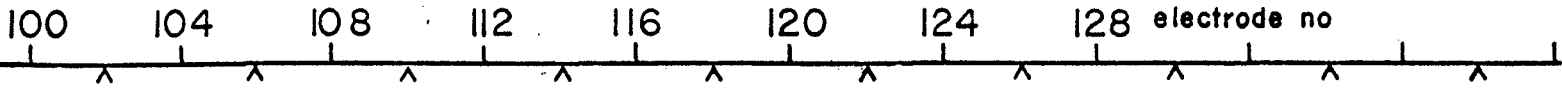
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

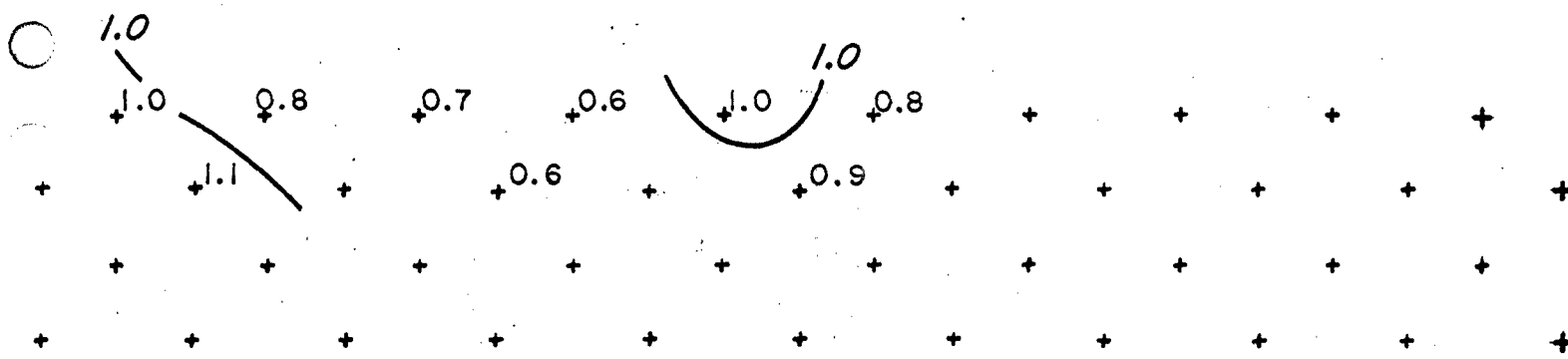
date 8/8/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400'
 operators _____

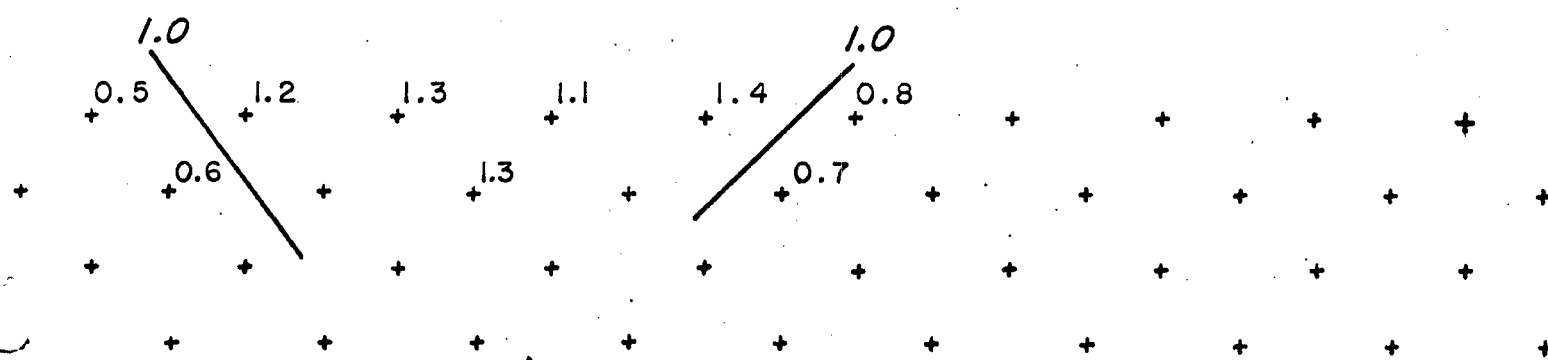
location _____
 map ref. _____
 line no. 152N
 bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/9/69

line location LAURA
 frequencies 3 & .3 cps
 dipole length 400'
 operators _____

location _____
 map ref. _____
 line no. 152N
 bearing _____

64 68 72 76 80 84 88 92 electrode no 100

+ 710 + 625 + 530 + 437 + 344 + 458 + 1090 + 790 + 1576 +

+ + + 582 + + 281 + + 644 + + 755 + +

+ + + + + + + + + + +

+ + + + + + + + + + +

ρ_a (apparent resistivity)

+ 1.0 + 1.0 + 0.6 + 0.4 + 0.4 + 0.6 + 1.0 + 1.2 + 1.1 + 1.3 +

+ + + 0.5 + + 0.4 + + 0.8 + + 0.8 + +

+ + + + + + + + + + +

+ + + + + + + + + + +

% FE Frequency effect

+ 1.4 + 1.6 + 1.1 + 0.9 + 1.2 + 1.3 + 1.1 + 1.4 + 0.8 +

+ + + 0.9 + + 1.4 + + 1.2 + + 1.6 + +

+ + + + + + + + + + +

+ + + + + + + + + + +

(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

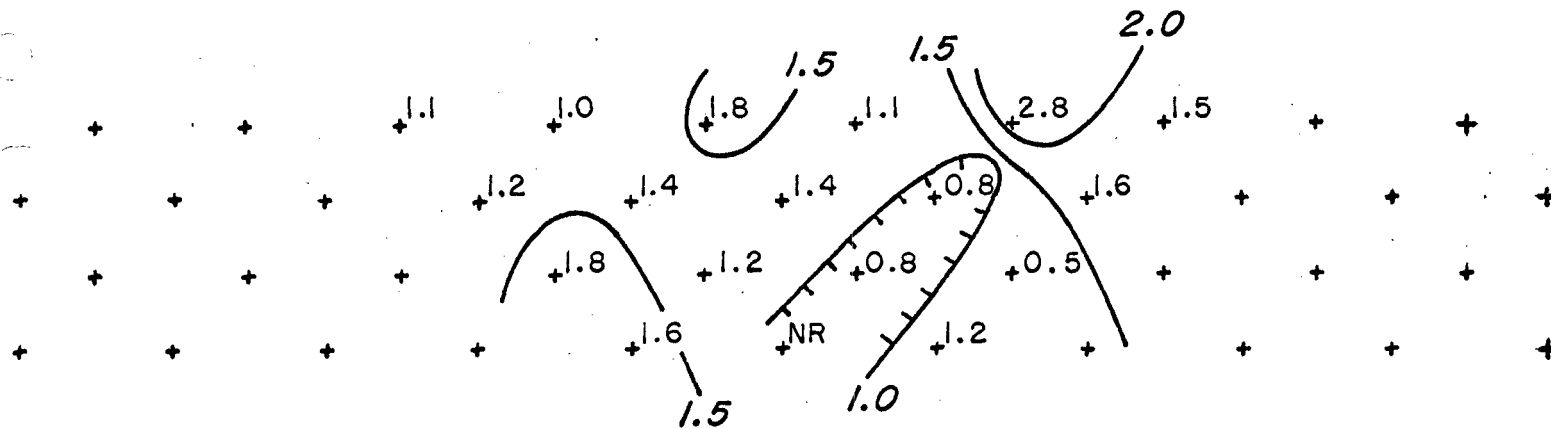
line location LAURA
 frequencies 3 8 .3 cps
 dipole length 400 DETAIL
 operators DB/GC

location _____
 map ref. _____
 line no. 152 N
 bearing _____

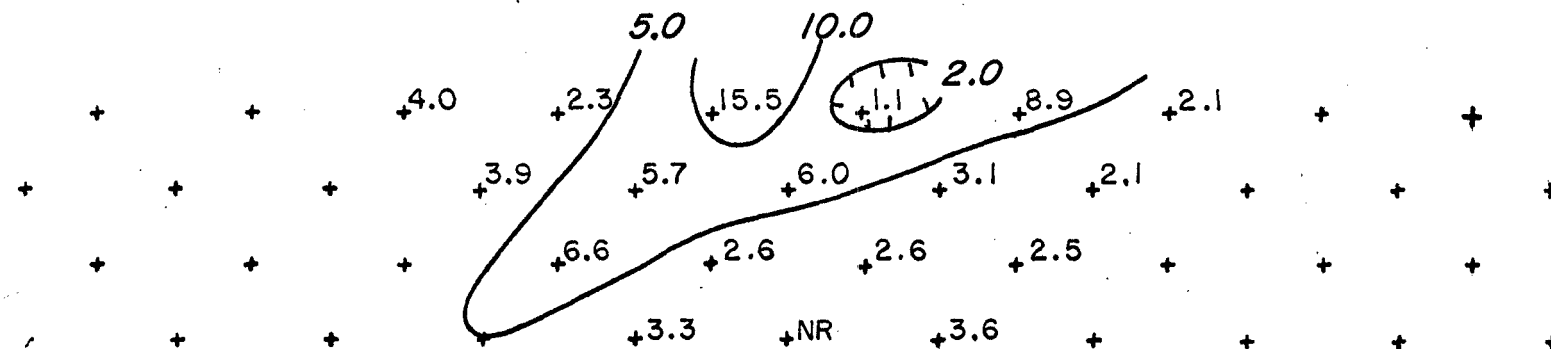
30E 34 38 42 46 50 54 electrode no 62E



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

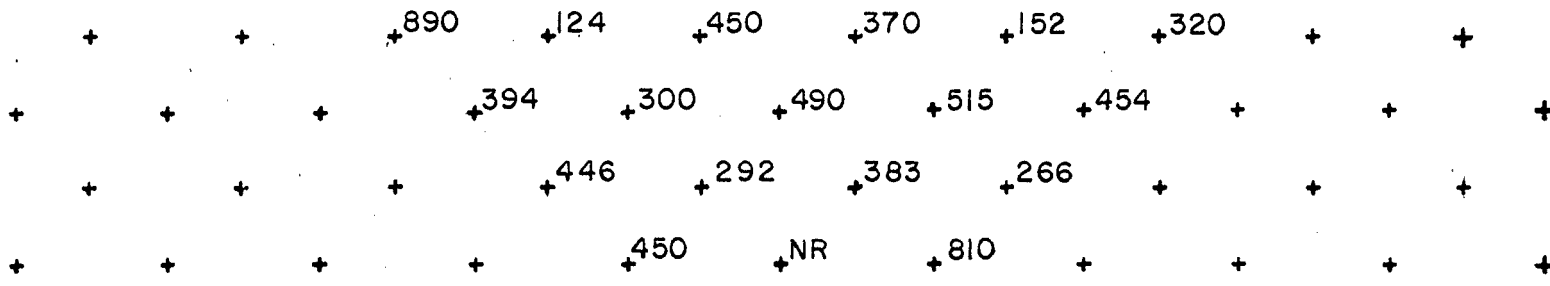
199 BENT STREET, CAMBRIDGE, MASS, 02141

date _____

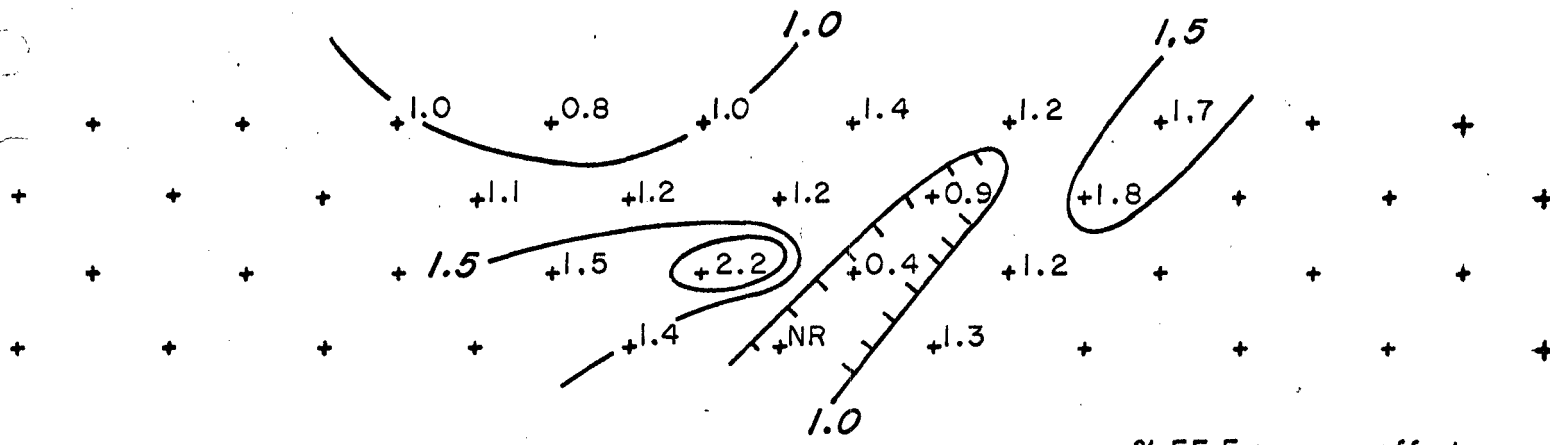
line location LAURA
frequencies 3 & .3 cps
dipole length 400' DETAIL
operators GR/DB

location _____
map ref. _____
line no. 156 N
bearing _____

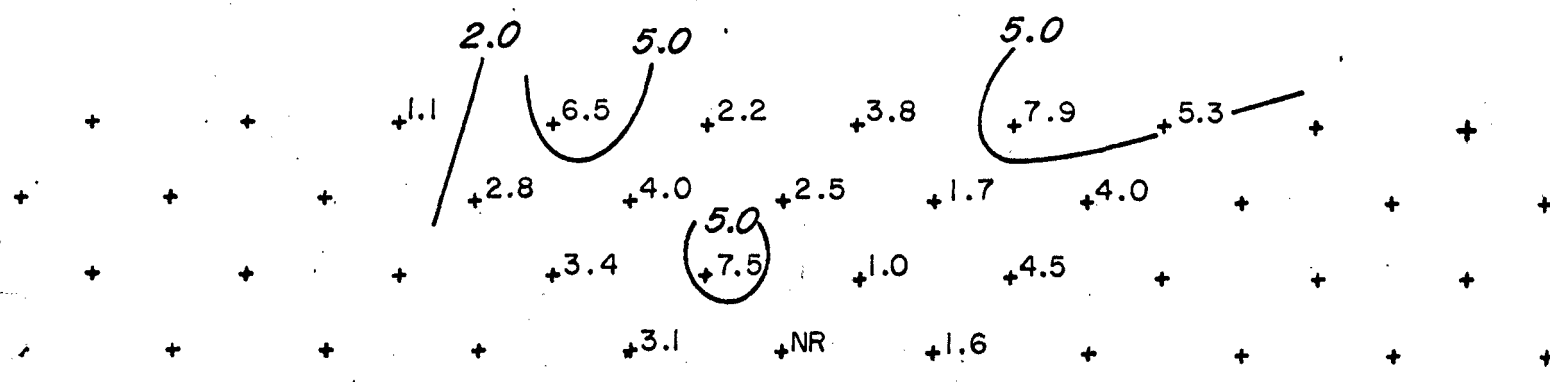
30E 34 38 42 46 50 54 electrode no 62E



P_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

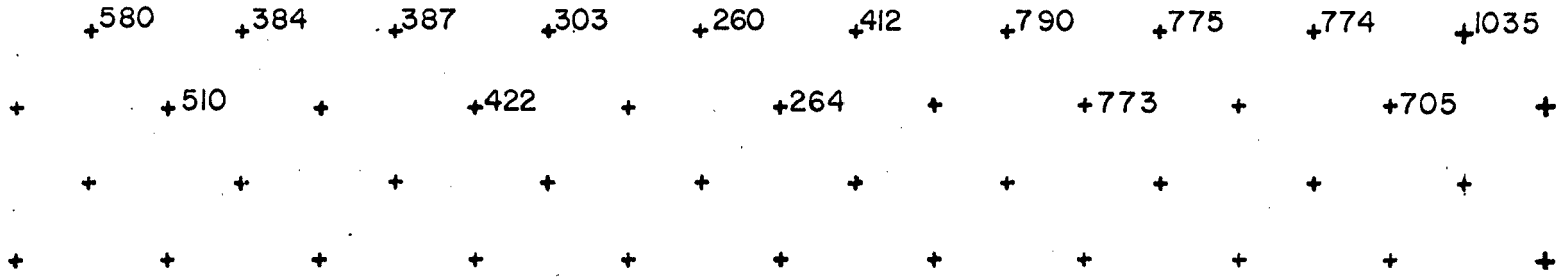
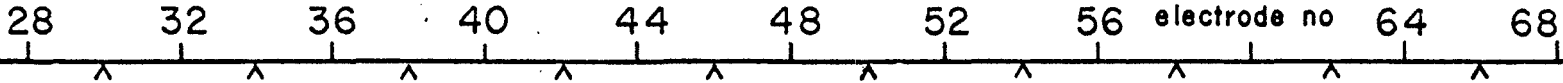
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

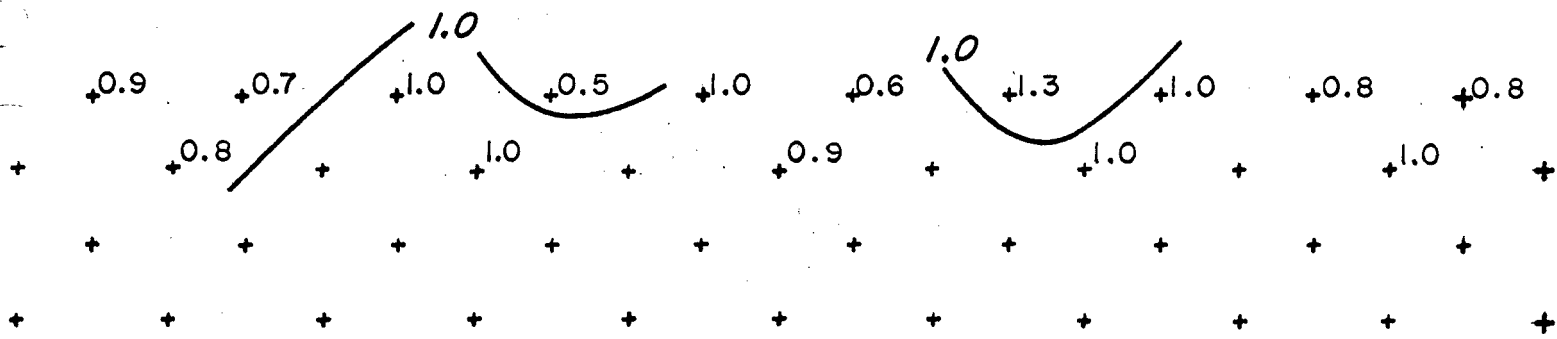
date 8/10/69

line location LAURA
frequencies 3 & .3 cps
dipole length 400
operators _____

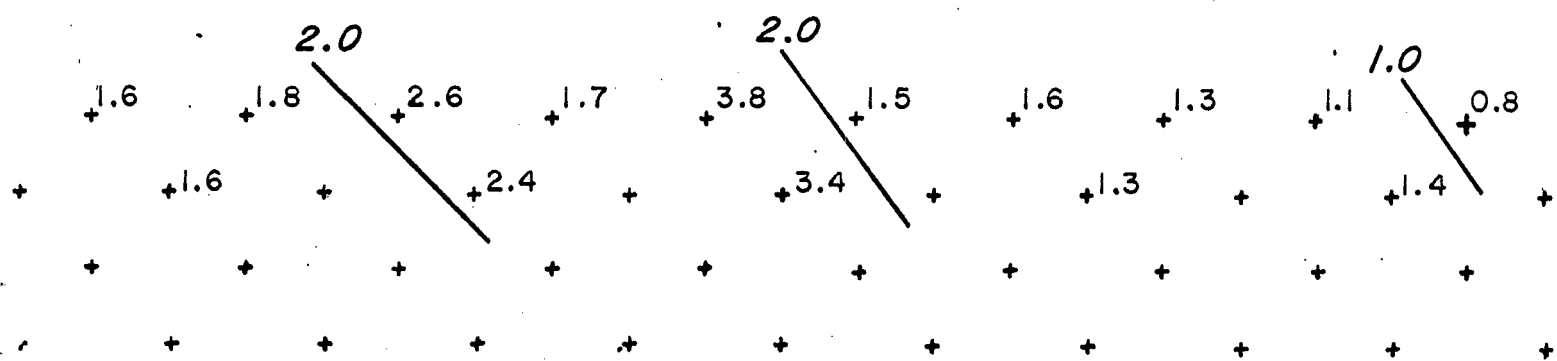
location _____
map ref. _____
line no. 160N
bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

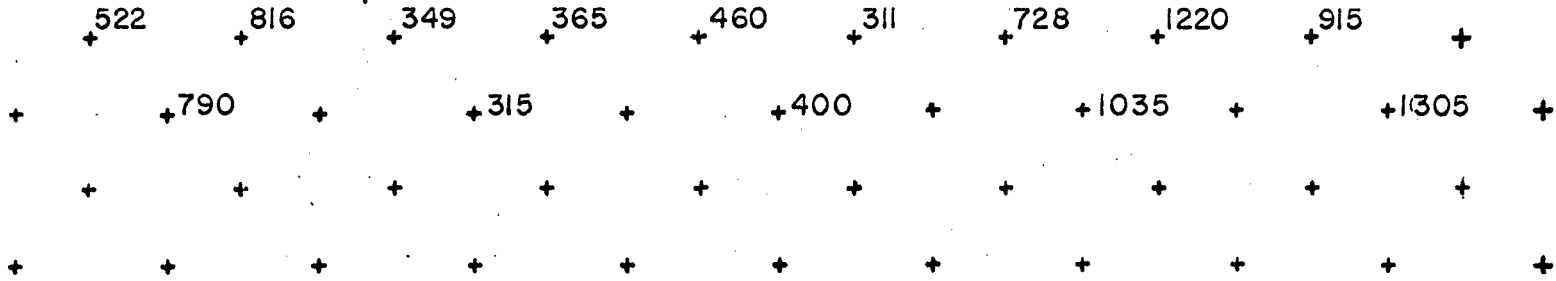
199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/10/69

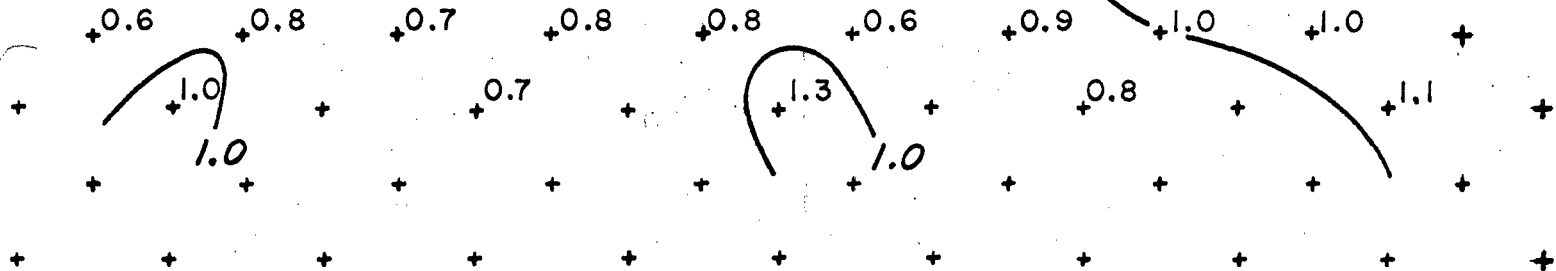
line location LAURA
frequencies 3 & .3 cps
dipole length 400
operators _____

location _____
map ref. _____
line no. 160 N
bearing _____

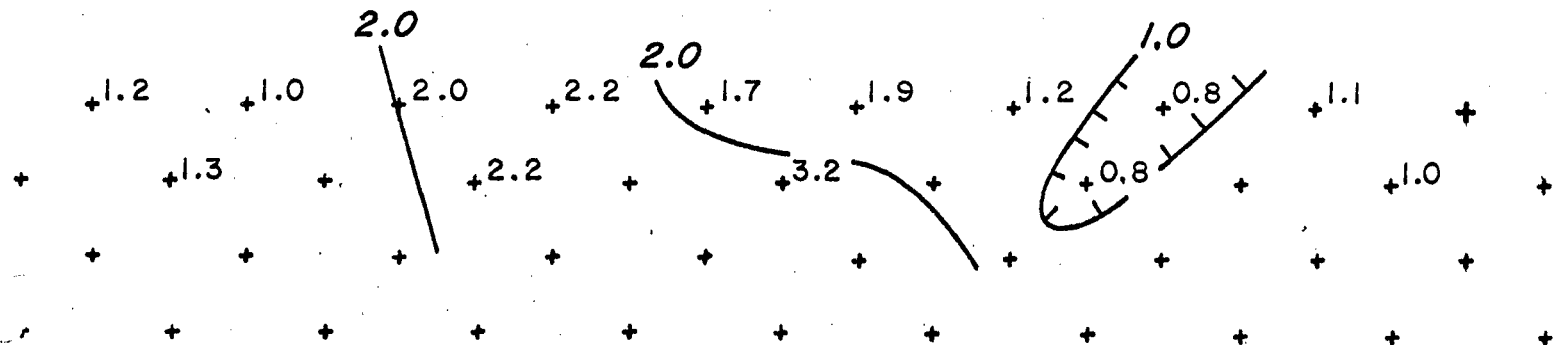
68 72 76 80 84 88 92 96 electrode no 104



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

date 8/10/69

line location LAURA

location _____

frequencies 3 & .3 cps

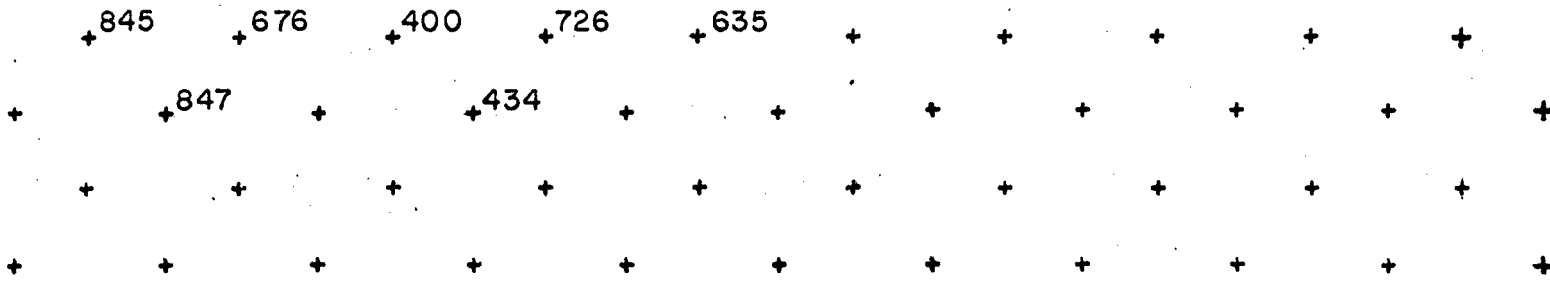
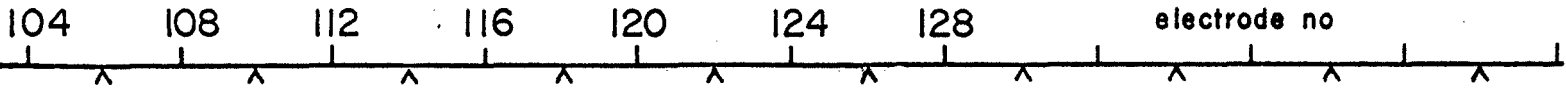
map ref. _____

dipole length 400

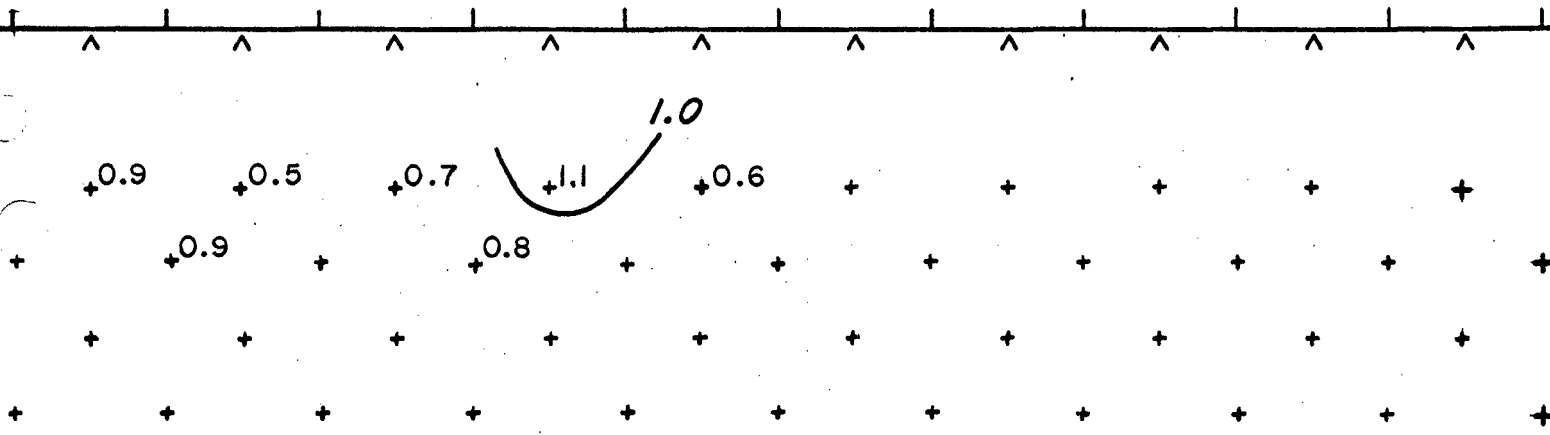
line no. 160N

operators _____

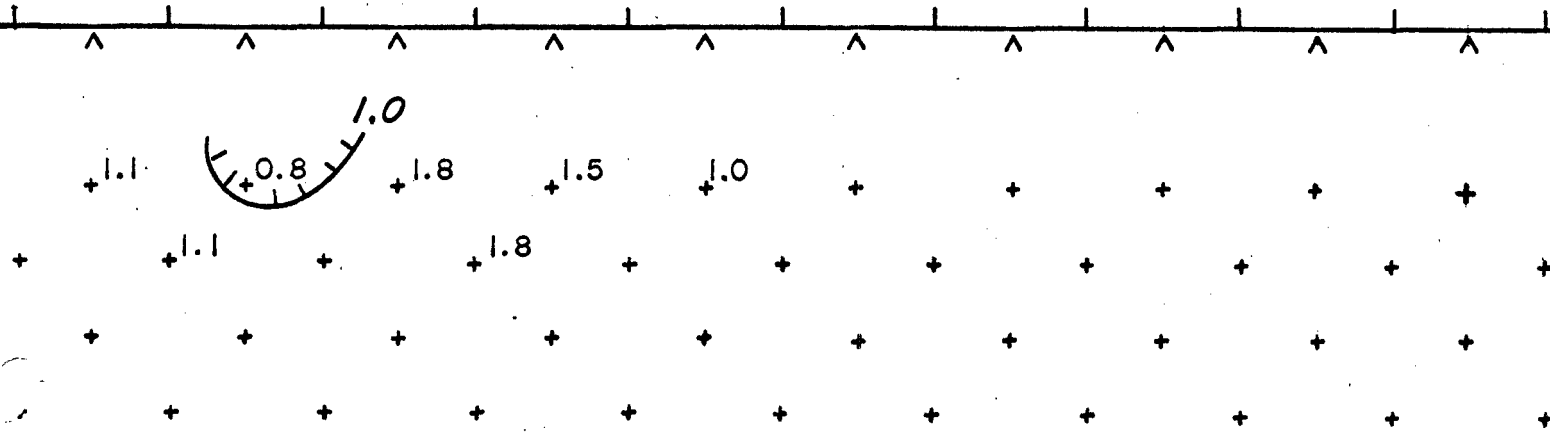
bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

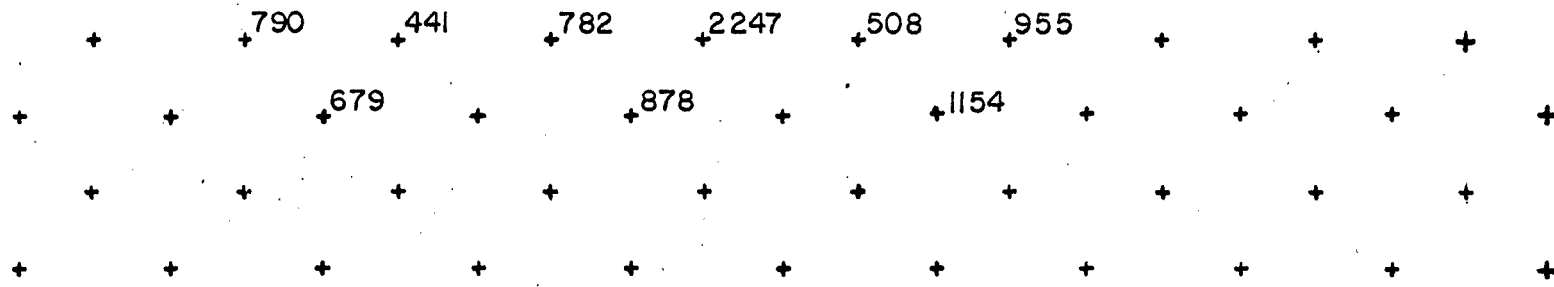
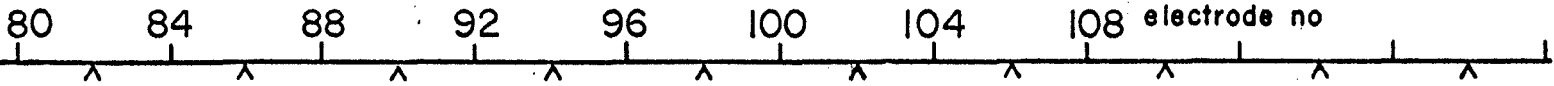
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

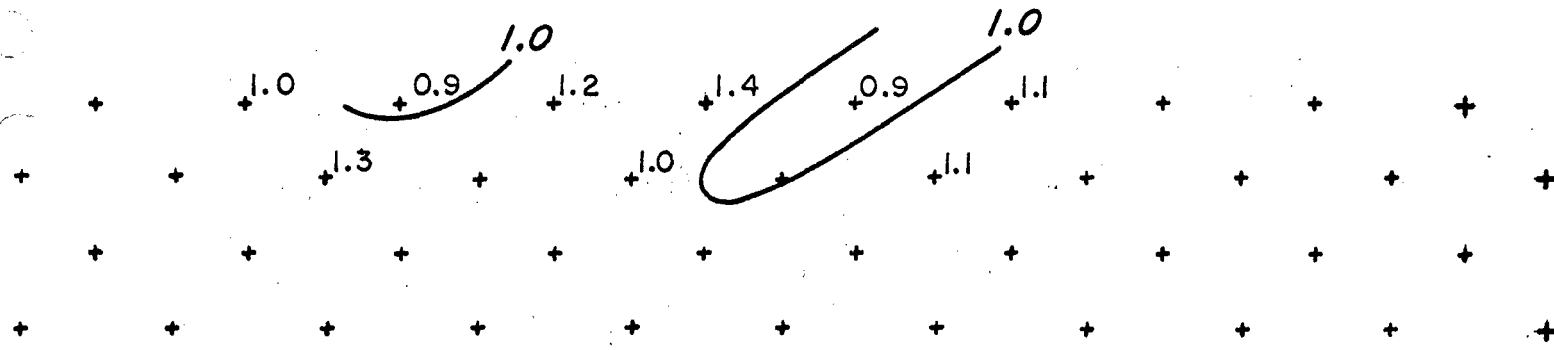
date 8/11/69

line location LAURA
frequencies 3 & .3 cps
dipole length 400'
operators _____

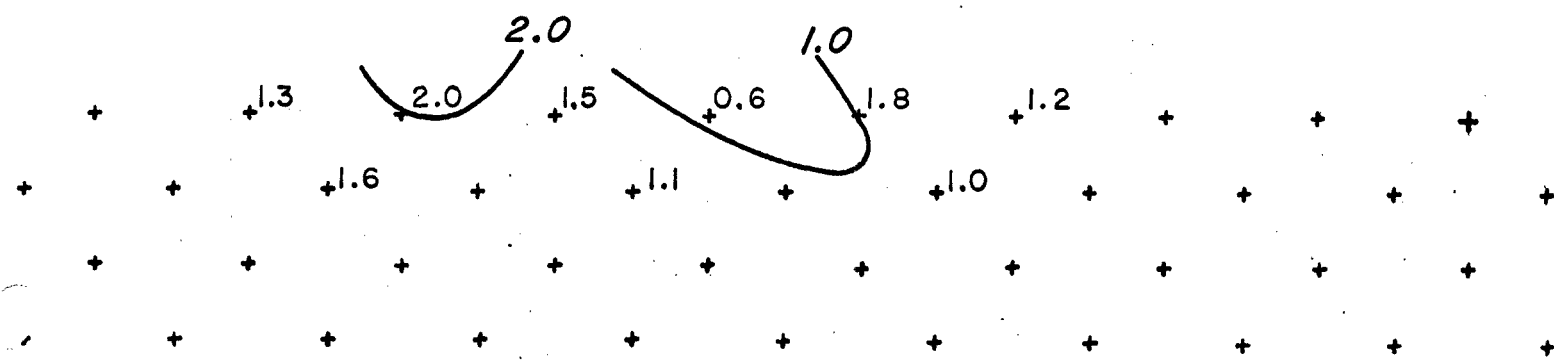
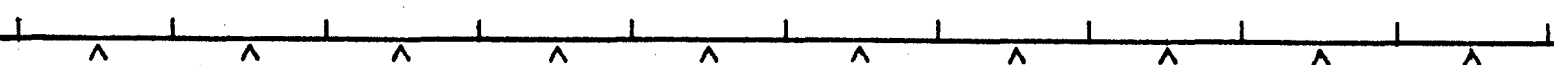
location _____
map ref. _____
line no. 168N
bearing _____



R_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

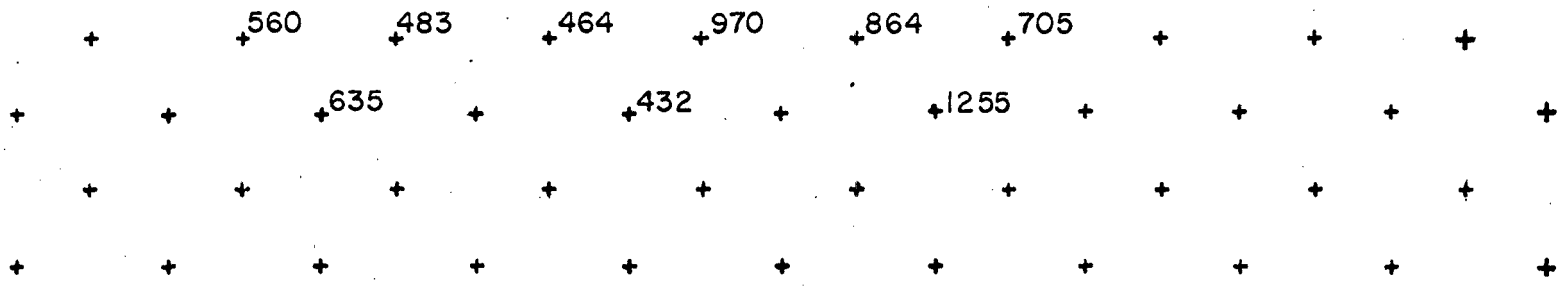
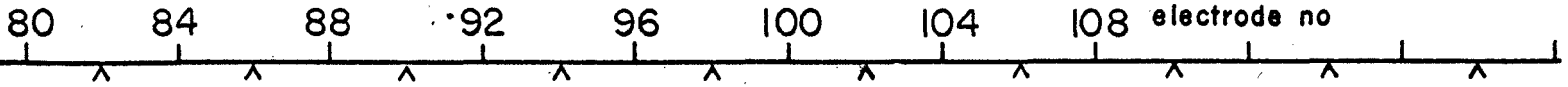
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

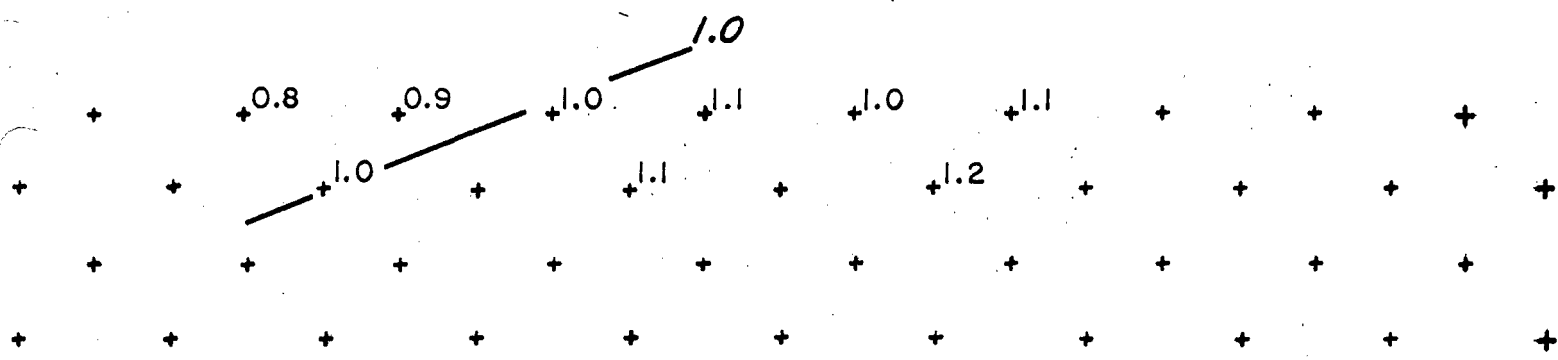
date 8/11/69

line location LAURA
frequencies 3 & .3 cps
dipole length 400'
operators GR

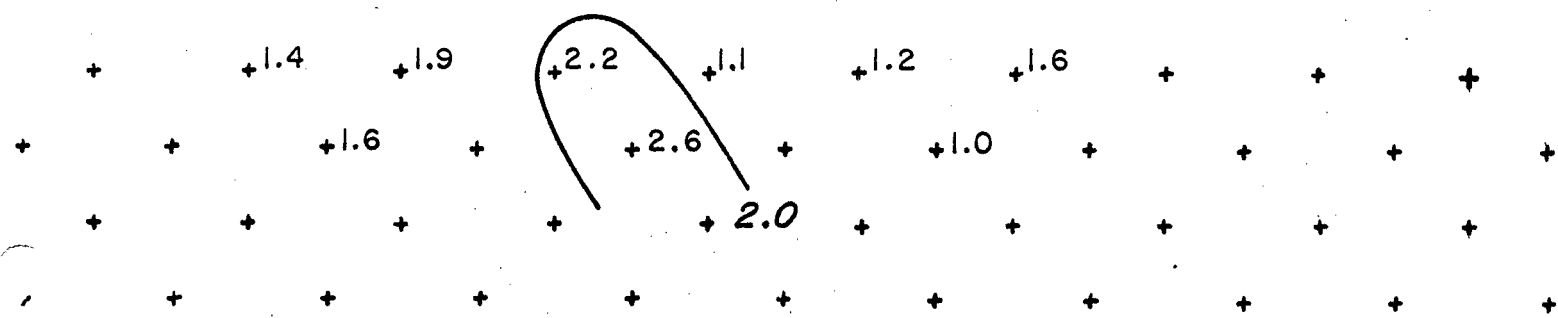
location _____
map ref. _____
line no. 176N
bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

INDUCED POLARIZATION SURVEY

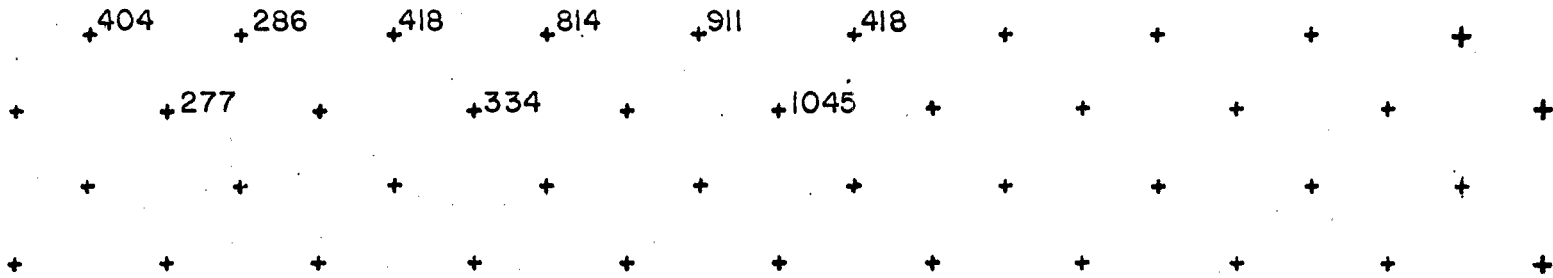
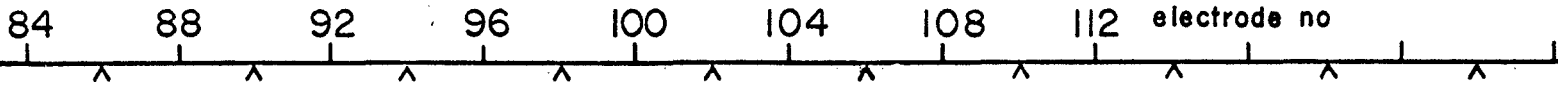
Geoscience Incorporated

199 BENT STREET, CAMBRIDGE, MASS, 02141

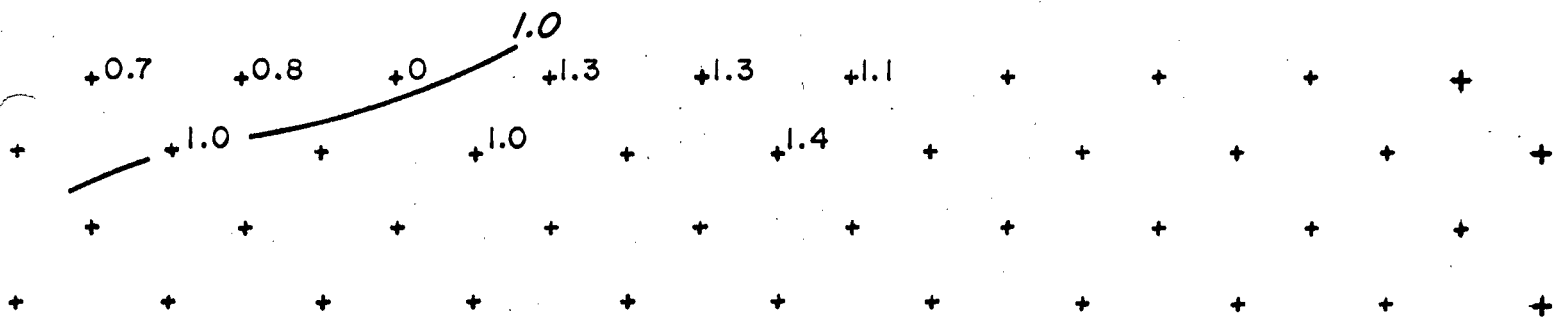
date 8/11/69

line location LAURA
 frequencies 3 9 .3 cps
 dipole length 400
 operators GR

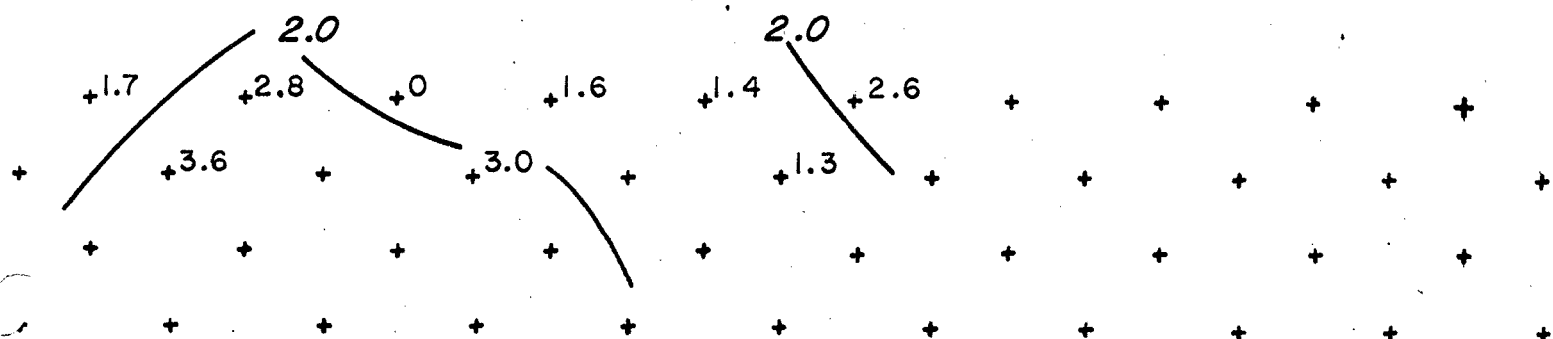
location _____
 map ref. _____
 line no. 184N
 bearing _____



ρ_a (apparent resistivity)



% FE Frequency effect



(M.F.)_a Metal Factor

continued from sheet _____ on sheet _____

APPENDIX II

QUALIFICATIONS OF PERSONNEL NOT
REGISTERED AS PROFESSIONAL ENGINEERS
IN BRITISH COLUMBIA

HOWARD S. LAHMAN

Senior Geophysicist

Education: B.S., Geology, Massachusetts Institute of
Technology

Since joining Geoscience in 1964, Mr. Lahman has had wide experience in all electrical prospecting methods, especially deep crustal resistivity, induced polarization, and Magneto-tellurics (both analog and digital systems). In these areas he has experience in field work, data reduction, and data interpretation. He also has field experience in other techniques of geophysical exploration, such as gravity surveys, and has worked in equipment production and maintenance.

HOWARD S. LAHMAN

Electrical Properties of Basement Rock from Deep Resistivity Measurements (April 1968), 49th Annual Meeting of AGU, (with Arnold Orange and Keeva Vozoff).

Detailed Gravity Results on Iron Formation, Tibito, Colombia, S. A. (1966), in preparation for Corporacion Minera Colombiana, (with Keeva Vozoff).

Induced Polarization as a Geophysical Method (1966), Geoscience Publication, (with Keeva Vozoff).

Deep Resistivity Results from D. C. Ground Tests at Hoover Dam (1965), Air Force Contract AF19(628)-2351, Scientific Report No. 6, (with Keeva Vozoff).

Deep Resistivity Results from Six Pre-Cambrian Areas of the Western U.S. (1965), Air Force Contract AF19(628)-2351, Scientific Report No. 7, (with Arnold Orange and Keeva Vozoff).

Deep Resistivity Investigations in the Continental United States (1965), Air Force Contract No. AF19(628)-2351, Scientific Report No. 8, (Final Report) (with Arnold Orange and Keeva Vozoff).

Deep Resistivity Results from North Carolina, Virginia, Pennsylvania, Wisconsin, and Missouri (1964), Air Force Contract AF19(628)-2351, Scientific Report No. 5 (with Philip Nelson).

Guide for Plotting, Manipulation, and Interpretation of Pole-Dipole and Dipole-Dipole Master Curves (1964), Geoscience Bulletin.

KEEVA VOZOFF

Senior Vice President

Education: Ph. D., Geophysics, Massachusetts Institute of Technology; M. S., Geophysics, Pennsylvania State; B. S., Physics, University of Minnesota.

Dr. Vozoff joined Geoscience in September 1964 having been Associate Professor of Physics at the University of Alberta in Edmonton, Canada. His research interests are in geomagnetics, gravity, electrical properties of the earth, and data processing.

His previous industrial experience has been in exploration with Rio Tinto and McPhar Geophysics in Canada, and with Phelps Dodge Corporation in the United States. He has directed geophysical exploration and research in many parts of the world.

While in Alberta, he taught advanced and graduate courses in all phases of earth physics. His research experience includes analysis, instrumentation, measurement, and modeling in magnetotellurics, resistivity, seismology, and gravity, as well as modern techniques of geophysical exploration. Dr. Vozoff has set up and operated geophysical observatories, and programmed and computed the first Haskell-Thompson dispersion curves ever done by digital computer.

KEEVA VOZOFF

Selected Publications

- Magneto-Telluric Measurements in the North German Basin, (1968)
Geophysical Prospecting, 16, No.4, pp.454-473, (with
C.M. Swift, Jr.)
- Mining Exploration with Natural Electromagnetic Fields, Proceedings
of the Canadian Centennial Conference on Mining and Ground-
water Geophysics, (with D.S. Strangway) (in press).
- Magneto-Telluric Measurements in Southern Alberta (1966), Geophysics,
31, No.6, pp. 1153-1157, (with R.M. Ellis).
- An Analog Model for the Magneto-Telluric Effect (1965), Journal of
Geophysical Research, 70, No.8, pp. 1939-1946, (with
D. Rankin and G.D. Garland).
- Telluric Currents and their Use in Petroleum Explorations (1964),
Bulletin AAPG, 48, No.12, pp. 1890-1901, (with R.M. Ellis
and M.D. Burke).
- Results and Limitations of Magneto-Telluric Surveys in Simple Geologic
Situations (1963), Geophysics, 28, No.5, Pt. 1, pp. 778-792,
(with H. Hasegawa and R.M. Ellis).
- Further Analysis of 'Pearls' (1963), Geofisica Pura e Applicata, 55,
No.2, pp. 101-109 (with R.M. Ellis).
- Composition of 'Pearls', Nature, 194, No.4828, pp. 539-541 (with
R.M. Ellis and G.D. Garland).
- Calibration of Pulsation Detector Coils (1961), Journal of Geophysical
Research, 66, No.6, pp. 1893-1894.
- Numerical Resistivity Interpretation; General Inhomogeneity (1960),
Geophysics, 25, No.6, pp. 1184-1194.
- Numerical Resistivity Analysis; Horizontal Layers (1958), Geophysics,
23, pp. 536-556.
- Gravity Investigation in North-Central Pennsylvania (1953), Transactions
A.G.U., 34, No.3, pp. 357-359, (with B.F. Howell, Jr.).

KEEVA VOZOFF

Magneto-tellurics provides a useful new tool for petroleum hunters (1969), *The Oil and Gas Journal*, 67, No.37, p.66-80 (with T. Cantwell and W.M. Mebane)

Magneto-telluric measurements in the North German Basin, (1968) *Geophysical Prospecting*, 16, No.4, p.454-473, (with C.M. Swift, Jr.)

Mining exploration with natural electromagnetic fields, *Proceedings of the Canadian Centennial Conference on Mining and Ground-water Geophysics*, (with D.S. Strangway) (in press).

Magneto-telluric measurements in Southern Alberta (1966), *Geophysics*, 31, No.6, p.1153-1157, (with R.M. Ellis).

Results of in-situ rock resistivity measurements (1966), *AGARD Conference Proceedings No.20*, p.287-312, CFSTI, Springfield, Va. (with T. Cantwell, H. Lahman, and A. Orange).

An analog model for the magneto-telluric effect (1965), *Journal of Geophysical Research*, 70, No.8, p. 1939-1946, (with D. Rankin and G.D. Garland).

Telluric currents and their use in petroleum exploration (1964), *Bulletin AAPG*, 48, No.12, p.1890-1901, (with R.M. Ellis and M.D. Burke).

Results and limitations of magneto-telluric surveys in simple geologic situations (1963), *Geophysics*, 28, No.5, Pt. 1, p. 778-792, (with H. Hasegawa and R.M. Ellis).

Further analysis of 'Pearls' (1963), *Geofisica Pura e Applicata*, 55, No.2, p. 101-109 (with R.M. Ellis).

Composition of 'Pearls', *Nature*, 194, No.4828, p.539-541 (with R.M. Ellis and G. D. Garland).

Calibration of pulsation detector coils (1961), *Journal of Geophysical Research*, 66, No.6, p. 1893-1894.

Numerical resistivity interpretation; General inhomogeneity (1960), *Geophysics*, 25, No.6, p.1184-1194.

Numerical resistivity analysis; Horizontal layers (1958), *Geophysics*,
23, p. 536-556.

Gravity investigation in North-Central Pennsylvania (1963),
Transactions A.G.U., 34, No. 3, p. 357-359, (with B.F.
Howell, Jr.).

APPENDIX III

Invoice

and

Statement of Costs



GEOSCIENCE INCORPORATED

A SUBSIDIARY OF AMPEX CORPORATION

199 BENT STREET, CAMBRIDGE, MASSACHUSETTS 02141

STATEMENT AND INVOICE

Customer's Order No.
Order Date
Requisition No.
Contract No.

Invoice No.
Invoice Date
Terms: Net 30 days

SOLD TO: Can West Investments, Ltd.
1770-777 Hornby Street
Vancouver, B.C.
Canada

Shipped To:

Date Shipped
Shipped Via

FOR CUSTOMER'S USE

Material Received _____
Account Number _____
Date Paid _____
Check Number _____

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
----------	-------------	------------	--------

Laura Mines Ltd., WJ Claim Group, Final Invoice

Charges

25.3 line miles @ \$400/line mile	\$10,120.00
5 line miles @ \$671/line mile	3,355.00
.3 line miles @ \$1063 /line mile	\$ 319.00
	<u>\$13,794.00</u>

Credits:

2 men supplied by Can West 6 July-16 August,	
1 $\frac{10}{31}$ months @ \$1300/mo.	\$ 1,719.00
Camp supplied by Can West 6 July - 16 August,	
1 $\frac{10}{31}$ months @ \$1220/mo.	\$ 1,613.00
	<u>\$ 3,332.00</u>

NET CHARGES: \$10,462.00

Statement of Cost Breakdown for Induced Polarization

Survey Done On Laura Mines Ltd. Property

(50°N, 120°N), Highland Valley, B. C.

(Claim Group: WJ 1-12, 13-19, 21-23, 31-34,

41-43, 48, 49, 50, 53, 63-80, 82, 84, 85, 87, 88,

89, 103; BOOT 1-3)

Performed for Can West Investments Ltd.

PERIOD OF WORK: 6 July through 16 August, 1969
23 September through 3 October, 1969

FIELD WAGES:

G. Ryan 410.5 hrs. @ \$4.31	\$1769.26	
Overhead @ 110%	<u>\$1946.86</u>	\$3716.12
G. Cole, 1-10/31 mo. @ \$702/mo.	\$ 928.00	
M. Funk, 300.5 hrs. @ \$1.90/hr.	602.30*	
D. Baker, 151.5 hrs. @ \$1.75/hr.	293.29*	
G. Davidson, 118.5 hrs. @ \$1.45/hr.	187.16*	
B. Gunn, 118.5 hrs. @ \$1.45/hr.	187.16*	
E. Sears, 38 hrs. @ \$1.80/hr.	81.90*	
G. Rothermal, 38 hrs. @ \$1.40/hr.	56.70*	
	<u>\$2464.61</u>	
Overhead @ 56%	1380.18	
	<u>\$3844.79</u>	\$3844.79
G. Wong @ \$650/mo. 1-10/31 mo.	\$ 859.50**	
J. Stirling @ \$650/mo. 1-10/31 mo.	859.50**	
	<u>\$1719.00</u>	\$1719.00

INTERPRETATION AND REPORT WAGES:

K. Vozoff, 1.8 days @ \$103.70/day	\$151.00	
H. Lahman, 4 days @ \$54/day	216.00	
J. Cincotti, 22 hrs. @ \$3.87/hr.	85.00	
	<u>\$452.00</u>	
Overhead @ 110%	497.20	
	<u>\$849.20</u>	\$849.20

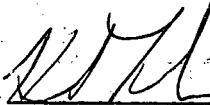
DIRECT COSTS:

Vehicles, Equipment, Peripheral Supplies:	\$4,892.00
Camp Facilities and Sustenance**	1,613.00
Supervisory Travel; Mobilization Costs:	<u>1,970.00</u>
	\$17,754.91
G&A @ 15%	<u>2,662.37</u>
TOTAL COST	\$20,417.28
Billing to Can West Investments, Ltd.	<u>\$17,126.00</u>
NET LOSS	\$ 3,391.28

* Figures adjusted for overtime.

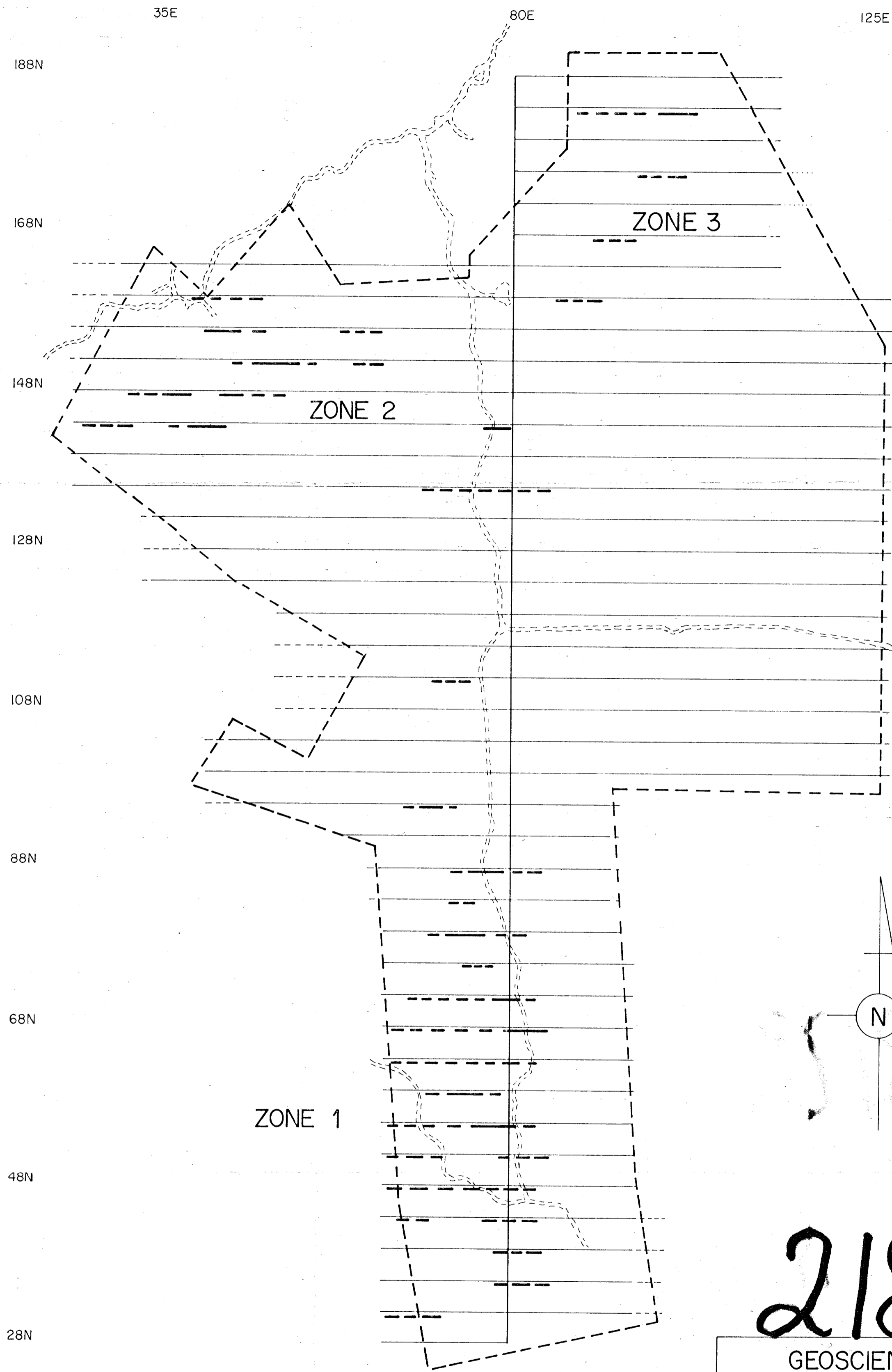
** Services provided by Can West Investments Ltd. at flat fee.

This statement is an account of expenses incurred by Geoscience, Inc.



H. S. Lahman

December 23, 1969

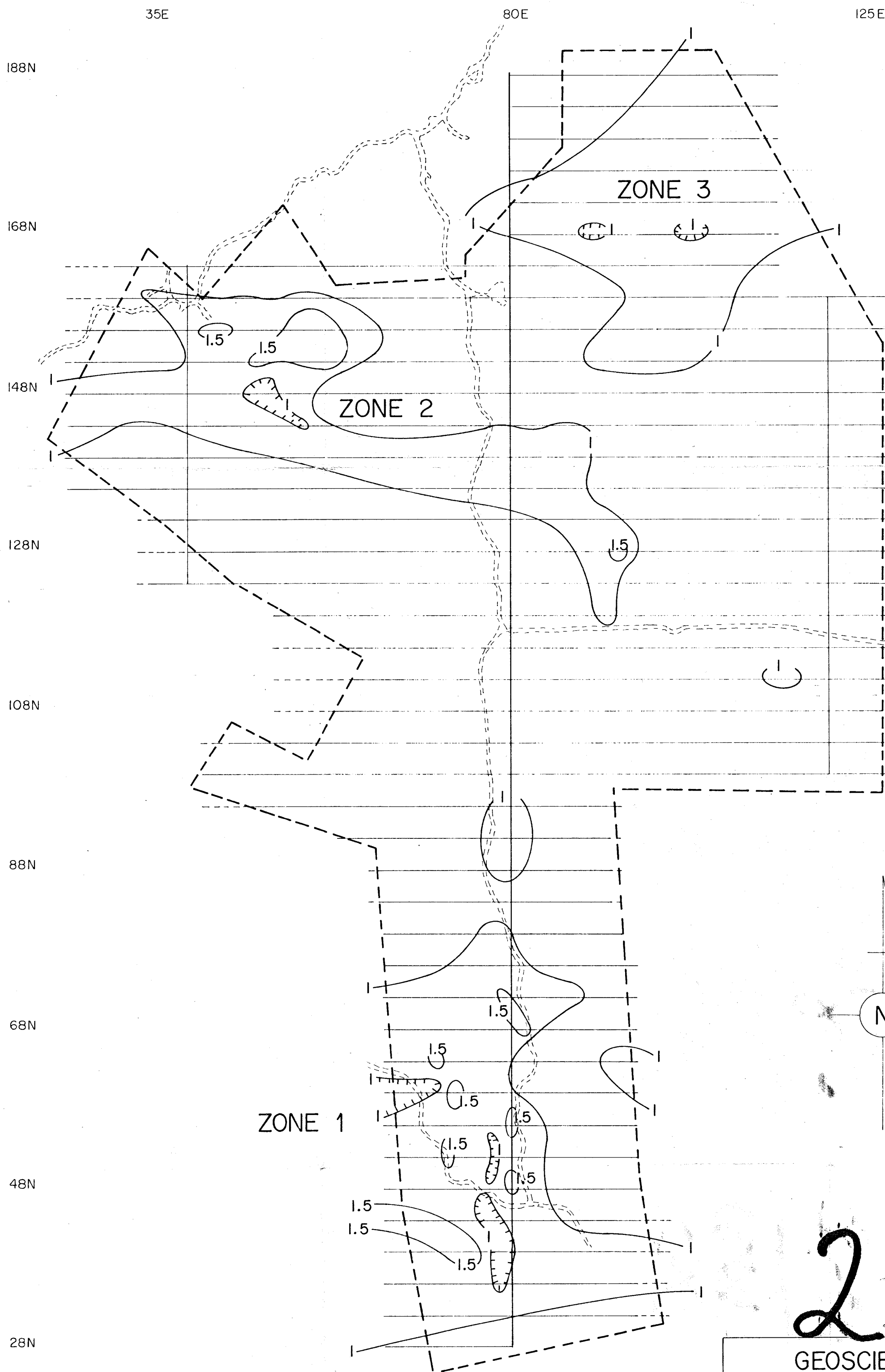


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P.S. Hirt
Dec. 8, 1969

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2188 MAP #1

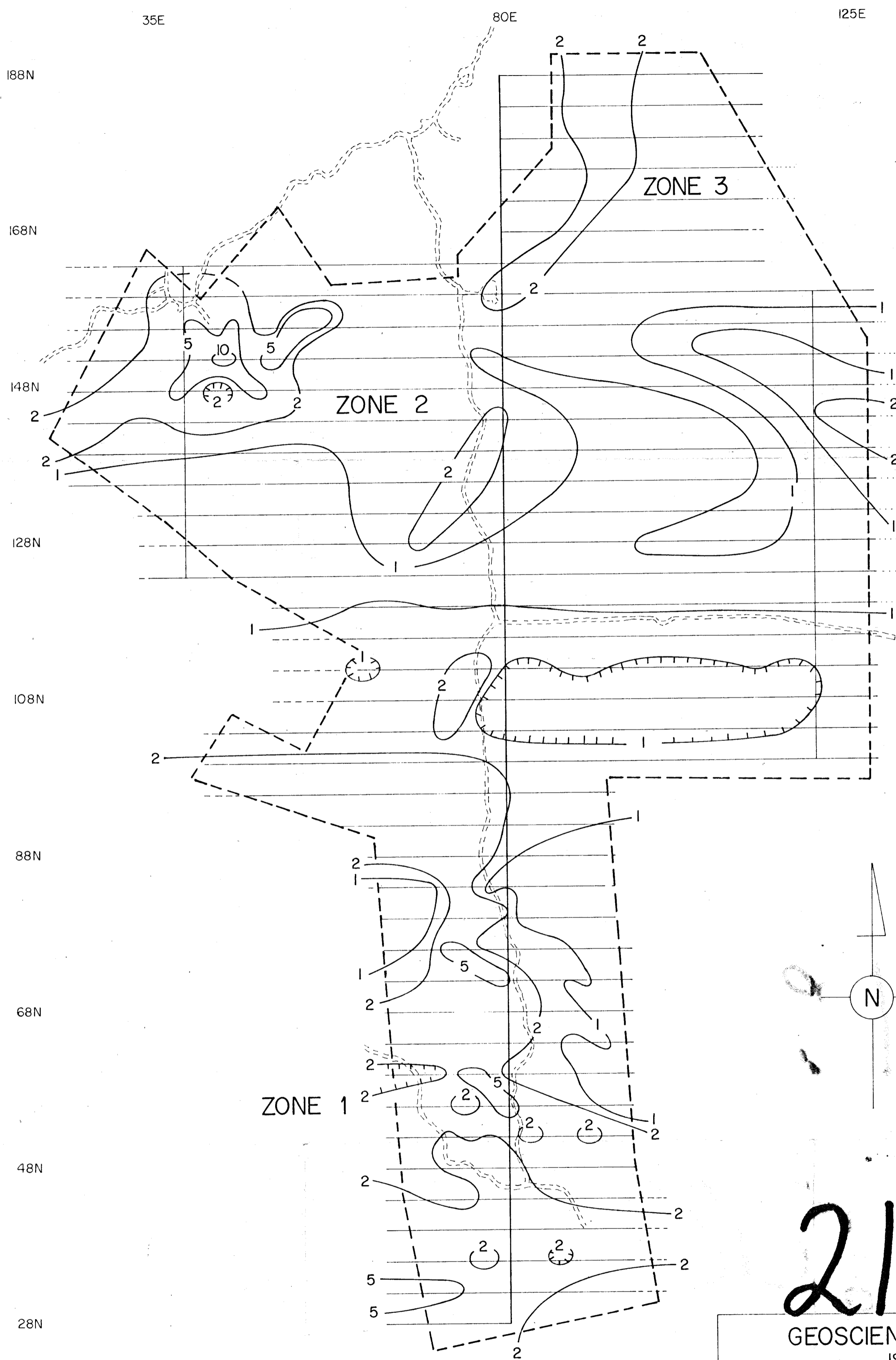
GEOSCIENCE INCORPORATED 199 BENT STREET CAMBRIDGE, MASS.	
INDUCED POLARIZATION SURVEY	
PROPERTY : LAURA MINES LTD., WJ CLAIM GROUP	
SURVEYED : 7/10/69 - 10/4/69	APPROVED :
TITLE ANOMALOUS ZONES	
——— Anomaly - - - Weak Anomaly	
DRAWN : 11/10/69	DRAWN BY : J. Cincotti
SCALE 1" = 1,000'	



2188 *P.S. Hart Dec. 8, 1969*

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **2188** MAP **#2**

GEOSCIENCE INCORPORATED 199 BENT STREET CAMBRIDGE, MASS.	
INDUCED POLARIZATION SURVEY	
PROPERTY : LAURA MINES LTD., WJ CLAIM GROUP	
SURVEYED : 7/10/69 - 10/4/69	APPROVED :
TITLE APPARENT PERCENT FREQUENCY EFFECT (PFE)	
DRAWN : 11/7/69	DRAWN BY : J. Cincotti
SCALE 1" = 1,000'	

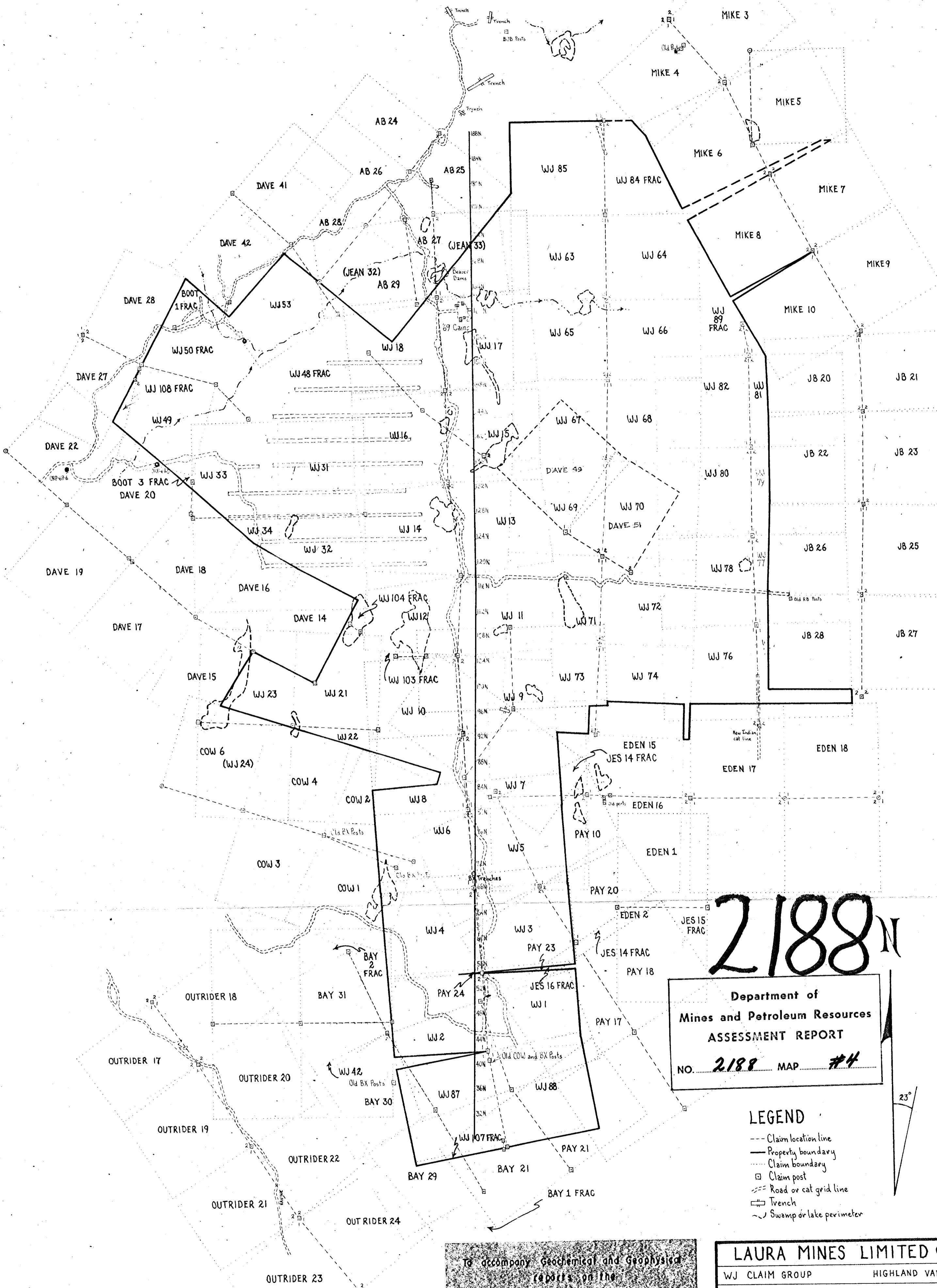


Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **2188** MAP **#3**

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P.S. Hit
Dec. 8, 1969

GEOSCIENCE INCORPORATED 199 BENT STREET CAMBRIDGE, MASS.	
INDUCED POLARIZATION SURVEY	
PROPERTY: LAURA MINES LTD., WJ CLAIM GROUP	
SURVEYED: 7/10/69 - 10/4/69	APPROVED:
TITLE	
METAL CONDUCTION FACTOR (MCF)	
DRAWN: 11/7/69	DRAWN BY: J. Cincotti
SCALE 1" = 1,000'	



2188^N

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2188 MAP #4

LEGEND

- Claim location line
- Property boundary
- Claim boundary
- Claim post
- Road or cat grid line
- Trench
- ~ Swamp or lake perimeter



P.S. Hilt
Dec. 29, 1969

To accompany Geochemical and Geophysical
reports on the
WJ Groups
Highland Valley B.C.
Kamloops Mining Division
December 12, 1969
P. HILT, H.S. LAHMAN

Laura Mines Limited (NPL)
WJ CLAIM GROUP HIGHLAND VALLEY B.C.
CLAIM LOCATION MAP
Drawn by: R. Combs Scale 1" = 1000' Checked by: MPS