4592

GEOPHYSICAL REPORT

ON

INDUCED POLARIZATION AND MAGNETIC SURVEYS

ON THE

MOOSEHORN, SUM AND JUG GROUPS

(MOOSEHORN PROPERTY)

OMINECA MINING DIVISION

BY

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KIYOSHI KAWASAKI, B. SC., GEOPHYSICIST

OCTOBER 1st, 1973

CLAIMS SURVEYED

PIT: 69, 71, 72, 73, 74, 75.

WAS: 1, 2, 3, 4, 17, 18, 19, 21, 23.

SUM: 5, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

JUG: 1 - 10.

RIP: 1 - 11, 13, 15, 17, 18, 19, 21, 22, 31, 33.

LOCATION

ELEVEN MILES SOUTHWEST OF CHUKACHIDA LAKE, B. C.

LAT. 57°32'N; LONG. 127°18'W

FIELD WORK

JUNE 9th - JULY 10th, 1973

T. Rodgers 15.X.73

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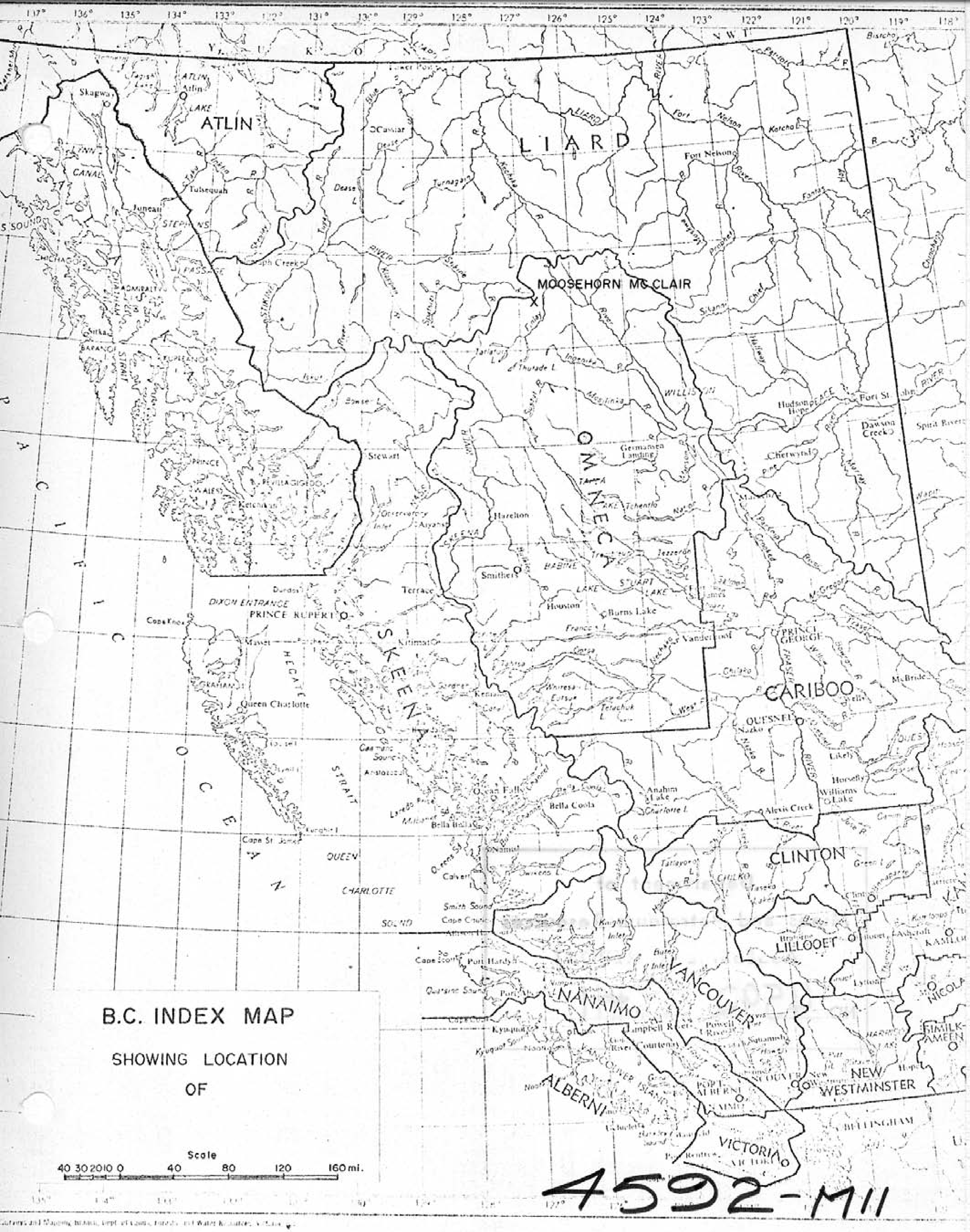
MAPS TO ACCOMPANY GEOPHYSICAL REPORT BY
H. YOSHIDA AND K. KAWASAKI



4592-M11

Surveys and Mapping Branch, Dept. of Lands, Forests and Water Resources, Victoria

1. INTRODUCTION

The Moosehorn property (mineral claims PIT: 69 - 76 and WAS: 1 - 32) was staked in 1971 as a result of the geological and the geochemical surveys around CHUKACHIDA Lake.

In 1972, mineral claims SUM: 1 - 18 and JUG: 1 - 12, were staked as a result of the detailed geochemical and geophysical surveys.

In 1973, mineral claims RIP: 1 - 11, 13 - 22, 24 - 27, 29, 31 - 32 and RIP: 12, 28, 33 - 34, and 36 - 39 were staked to the southwest of the Moosehorn property before the I.P. survey commenced. Subsequent to staking, the claims were divided into the Moosehorn Group (1971), the Sum Group (1973) and the Jug Group (1973).

An exploration programme, comprising of geophysical, geological and geochemical surveys, was carried out from June 9th to July 10th, 1973, in order to follow up last year's results and to cover adjacent areas.

Twenty-two miles of line were prepared for geophysical surveys around the anomalies which were found in 1972 at Moosehorn property. Detail I.P. surveys were carried out from July 2nd to 8th, 1973, on the line where there were high I.P. readings. The procedure involved the use of different electrode separations. The magnetic survey was carried out from June 9th to July 10th. It was very effective in outlining the geological structure and rock distribution and was sometimes useful to indicate the mineralization for some type of ore bodies.

The geological features of this property appear to be very simple. An andesite lava is distributed throughout the whole property. Little mineralization is evident except in showings beside a creek and a trench on Line 36E. Each showing contains some pyrite, lead and zinc minerals. The geochemical anomalies obtained last year were quite noteworthy and suggested the existence of massive silver-lead-zinc ore associated with quartz-carbonate veins.

2. I.P. SURVEY

2-1 INTRODUCTION

The Induced Polarization (I.P.) survey was carried out from June 9th to July 10th, 1973 by using a pulse-type system manufactured by Huntec Limited of Toronto, Ontario.

Measurements with this system are made in the time domain.

The system consists basically of three units: a receiver, a transmitter and a motor-generator. The transmitter, which provides a maximum of 2.5 Kw. D.C. to the ground, obtains its power from the 2.5 Kw., 400 cycle, three phase generator driven by a gasoline engine. The cycling rate of the transmitter is 2.0 seconds "current on" and 2.0 seconds "current off". The pulses reverse continuously in polarity. The following data is recorded: a) amperes flowing through electrodes C1 and C2, b) the primary voltage (Vp) appearing between the potential electrodes, P1 and P2, during the "current on" part of the cycle and c) a secondary voltage (Vs) appearing between P1 and P2 during the "current off" part of the cycle. Four kinds of (Vs) are measured at the same time. The integrated time is Vs 1 = 0.24 - 0.29, Vs 2 = 0.29 - 0.39, Vs 3 = 0.39 - 0.59 and Vs 4 = 0.59 - 0.99 seconds respectively. The apparent chargeability (M) is automatically calculated by dividing the secondary voltage by the primary voltage and displayed digitalized.

The apparent resistivity (ρa) in ohm-feet / 2π is proportional to the ratio of the primary voltage and measured current, the proportionality factor depending on the geometry of the array used.

The chargeability and resistivity obtained are called apparent as they are values, which that portion of the earth sampled would have, if it were homogeneous. As the earth sampled is usually inhomogeneous, the calculated apparent chargeability and resistivity are functions of the actual chargeability and resistivity of the rocks.

The survey was carried out using the "THREE ELECTRODE ARRAY (pole-dipole)" method of surveying. In this method, the current electrode C1 and the two potential electrodes P1 and P2 are moved in unison along the survey lines. Survey lines were cut 800 feet apart for a total length of 22 line miles. The spacing between these three electrodes is kept constant for each traverse at a distance roughly equal to the depth to be explored by that particular traverse. The second current electrode C2 is kept fixed at "INFINITY".

Thus on a three electrode array traverse with an electrode spacing of 400 feet, a body lying at a depth of 300 feet will produce a strong response, whereas the same body lying at a depth of 400 feet will just be detected. By running subsequent traverses at different electrode spacings more precise estimates can be made of depth, width, and thickness of the causative bodies located by the I.P. methods.

SUMMARY OF I.P. SURVEY

(MCCLAIR AND MOOSEHORN PROPERTY)

DATE	From June 9th to July 10th
LINE INTERVAL	800 Feet
STATION INTERVAL	400 Feet
TOTAL LINE LENGTH	22 Line Miles
ELECTRODE ARRANGEMENT	Three Electrode Array
	(Pole-Dipole Array)
I.P. ARRANGEMENT	Time Domain
	M1 ; (240m to 290m seconds)
	M2 ; (290m to 390m seconds)
	M3 ; (390m to 590m seconds)
	M4 ; (590m to 990m seconds)
I.P. INSTRUMENTS	Huntec MK III
	(2.5 Kw Model)
RESULTS	
RESISTIVITY MAP	Scale 1":400'
	Map No. 211-GP-1
APPARENT CHARGEABILITY MAP	Scale 1":400'
	Map No. 211-GP-2A
	Integrated Time 390m - 990m seconds
	(M3 + M4)
APPARENT CHARGEABILITY MAP	Scale 1":400'
	Map No. 211-GP-2B
	Integrated Time 290m - 590m seconds
	(M2 + M3)

APPARENT CHARGEABILITY/	Scale	1":400'
APPARENT RESISTIVITY MAP	Map No.	211-GP-3
DETAIL I.P. SURVEY	Scale	1":400'
	Map Nos.	211-GP-5 and 6
	Integrated Time	290m - 590m seconds

2-2 TIME DOMAIN I.P. MEASURING SYSTEM

The form of the signal appearing at the receiver terminals, for an arbitrary chargeability effect, is illustrated in Figure 1-2, together with the corresponding wave form of current injected into the ground by an ideal transmitter. The effects of telluric noise, self-potential, or artificial noise as is caused by power lines, etc., is not for the moment considered.

The dotted portion of Figure 1-2 represents an idealized case, where there would be no chargeability affect, nor any mutual inductive coupling between the receiver input circuit, and the transmitter circuit. In Figure 1-3, two portions of the voltage versus time function have been designated Vp and Vs.

The quantity Vp is the maximum value of voltage appearing at the receiver terminals during the "on" time of the transmitter. Were the transmitter to remain on indefinitely, then Vp would attain some steady state value.

The quantity Vs refers to the voltage versus time function, following switch off of the transmitter. In the absence of inductive coupling, self-potential, or I.P. effect, it will fall immediately to zero. If chargeability alone is present, it will take an abrupt initial drop, and then decay gradually as illustrated. This decay time covers a wide range of values, from a few tenths of a second to several seconds. Also, it may be of reversed sign (negative Vs) or a composite of both positive and negative. Figure 1-4 is an enlarged portion of Figure 1-3 and illustrates the quantities measured by the Huntec MK III. The ultimate objective of any I.P. measurement in the time domain, is to obtain an estimate of the Apparent Chargeability and this is the ratio of Vs at time t 0 to Vp at infinite time. The individual M factors have no significance in themselves, the four readings provided by the MK III receiver are used by the interpreter to estimate the apparent chargeability by extrapolation of the decay curve to time t 0.

By plotting Vs 1, Vs 2, Vs 3 and Vs 4 on a logarithmic time base, it is usually possible to discriminate between inductive effects and chargeability, since the former usually has a much shorter time constant than the latter.

TIME - CURRENT WAVEFORMS OF TRANSMITTER

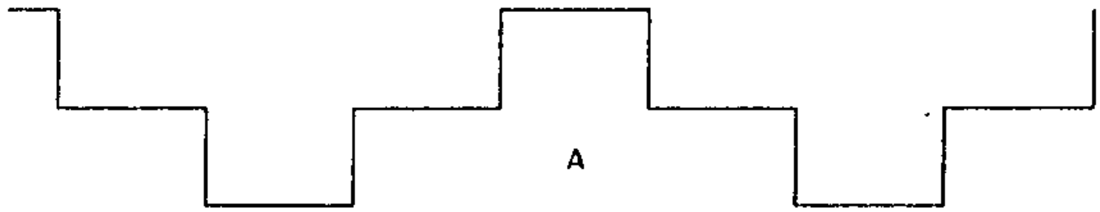


FIG. 1 - 1

SIGNAL AT RECEIVER TERMINAL

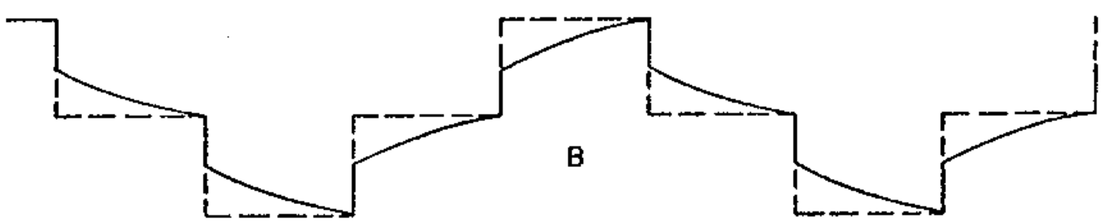


FIG. 1 - 2

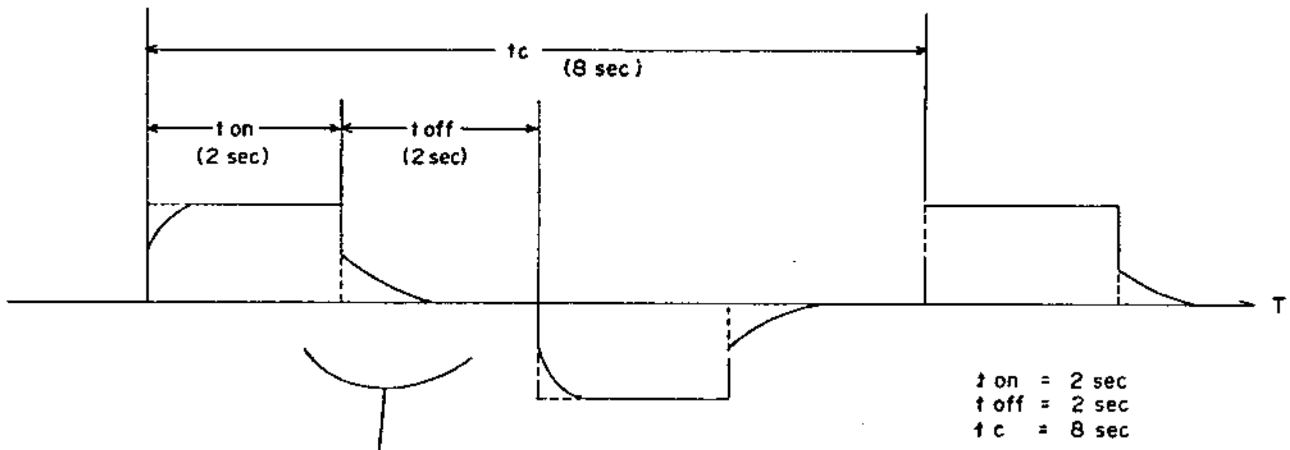


FIGURE 1-3

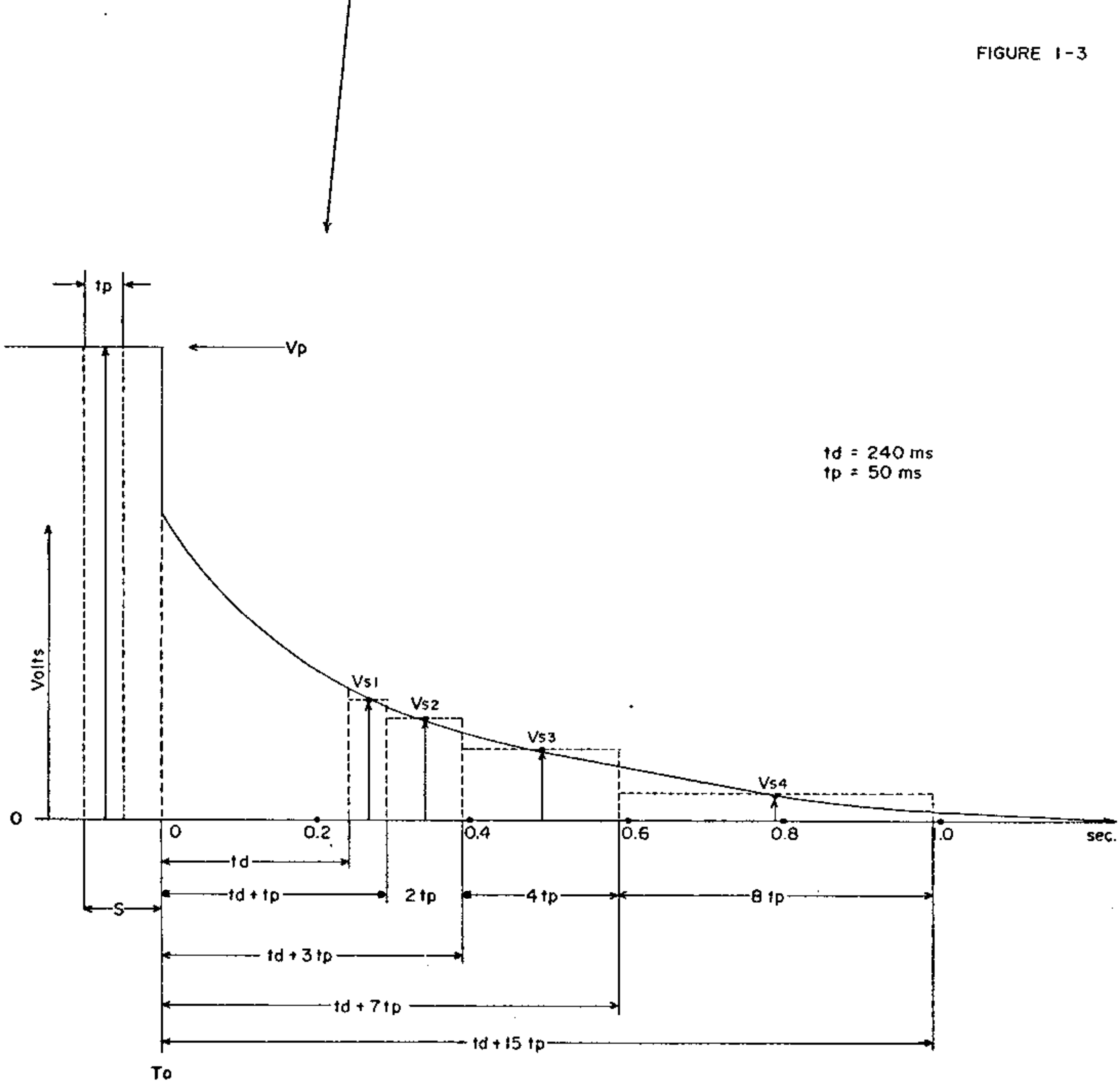


FIGURE 1-4

$$Vs\ 1 = \frac{1}{1} \int_{td}^{td + tp} Vs \ dt$$

$$Vs\ 2 = \frac{1}{2tp} \int_{td + tp}^{td + 3\ tp} Vs \ dt$$

$$Vs\ 3 = \frac{1}{4tp} \int_{td + 3\ tp}^{td + 7\ tp} Vs \ dt$$

$$Vs\ 4 = \frac{1}{8tp} \int_{td + 7\ tp}^{td + 15\ tp} Vs \ dt$$

$$Vp = \frac{1}{tp} \int_{to -}^{to - \quad + tp} Vp \ dt$$

For Figure 1-4 the following parameters are defined:

tc - total transmitter cycle time (8 seconds)

t_{off} - duration in seconds of the off period of the transmitter (2 seconds)

t_{on} - duration in seconds of the on period of the transmitter (2 seconds)

t_d - receiver delay time in seconds. Zero time reference is at instant of switch off of transmitter. (240m seconds)

t_p - basic integrating time in seconds (50m seconds)

The chargeability effect of M factor is defined as a dimensionless quantity.

$$M\ 1 = \frac{\overline{V}s\ 1}{\overline{V}p} \qquad M\ 2 = \frac{\overline{V}s\ 2}{\overline{V}p}$$

$$M\ 3 = \frac{\overline{V}s\ 3}{\overline{V}p} \qquad M\ 4 = \frac{\overline{V}s\ 4}{\overline{V}p}$$

Apparent chargeability

$$M = \frac{\overline{V}s \text{ at time to}}{\overline{V}p}$$

2-3 COEFFICIENT OF CORRELATION BETWEEN F.E.(%) AND CHARGEABILITY

The 1972 I.P. Survey on the Moosehorn Property used a Frequency Domain Method while the 1973 I.P. Survey adopted a Time Domain Method. In order to prepare a map on which the 1972 and 1973 data could be shown, it was necessary to calculate the coefficient of correlation between F.E.(%) and chargeability. Therefore, several lines were measured such that 1972 survey was duplicated using the Time Domain Method. The relationship (coefficient of correlation) was then calculated from the two sets of data.

The measurements were done on line 0 E and line 8 E. The results were shown in Figure 2-1 and Figure 2-2.

On line 0 E, the same electrode arrangement and separation, that is Pole-Dipole array with A=200' and N=1, was adopted. Likewise, on line 8 E, the same electrode array was adopted but the electrode separation was different: in the Frequency Domain Method (A=200') and in the Time Domain Method (A=400'). Thus, for line 8 E the F.E. value for a 400' electrode separation was estimated using the mathematical process of a running average on the data obtained at 200' separation.

The chargeability value is estimated (from F.E.(%) by the following formula:

assume Y as chargeability value

X as F.E.(%) value

$$Y - \bar{y} = r\ (\sigma y / \sigma x)\ (X - \bar{x})$$

where

$$\bar{x} = \frac{1}{N} \sum_{k=1}^{n} X_k = 3.421 \qquad \text{(mean value of X)}$$

$$\bar{y} = \frac{1}{N} \sum_{j=1}^{n} Y_j = 4.336 \qquad \text{(mean value of Y)}$$

$$x = \frac{1}{N} \sum_{k=1}^{n} (X_k - \bar{x}) = 1.460 \qquad \text{(variance of X)}$$

$$y = \frac{1}{N} \sum_{j=1}^{n} (Y_j - \bar{y}) = 1.637 \qquad \text{(variance of Y)}$$

N = sample number = 8

$$r = \frac{\sum_{i=1}^{8} (X_i - \bar{x})\ (Y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n} (X_i - \bar{x})^2 \quad \sum_{i=1}^{n} (Y_i - \bar{y})^2}} = 0.95 \qquad \text{(coefficient of correlation)}$$

Regression line

$$\underline{Y = 1.065 + 0.696}$$

The chargeability and the percent frequency effect are significant. The Regression line shows the relationship between chargeability and F.E.(%).

of the grid and high in the mountainous northwest part of the grid. The magnetic gradients were, correspondingly, flat and steep.

On the high magnetic zone, there are two remarkably strong anomalies. One extends from station 72E-36N to station 104E-36N, the other extends from station 8E-16N to station 32E-16N. These two anomalies are located very close to the I.P. chargeability anomalies A and C.

Figure 3-1 shows the results of the analysis using the curve matching method. The standard curves used were specially computed for northern Canada by T. Suzuki and H. Yoshida of Sumitomo Metal Mining Co. Ltd., Tokyo, Japan. The dotted line represents the standard curve exhibited by a three-dimensional prism model which has a total magnetic force of 55,000 gammas and an inclination of 70 degrees. The causative dyke structures are indicated by the hatched areas in the lower half of the figure.

The magnetic anomaly (MB) consists of two parallel dyke-like structures which have a northwest strike direction, a dip angle of 45 degrees and a width of 400 feet. The magnetic susceptibility is about 0.01 c.g.s./cc. This anomaly is covered by approximately 200 feet of overburden.

The I.P. anomaly (B) is located as if to be sandwiched between the two dyke-like structures detected by the magnetic survey. Therefore, the magnetic anomaly (MB) is considered to reflect some boundary condition related to the causative body which creates the I.P. anomaly.

Magnetic anomaly (MA) is located at the boundary between high and low resistivity zones which are shown in the resistivity map (See

3. GROUND MAGNETIC SURVEY (See Figure 222-GP-4)

3-1 INTRODUCTION

Between June 17th and July 4th, 1973, the Ground Magnetic Survey was carried out using "MCPHAR M700" fluxgate magnetometer. This instrument has an accuracy of 20 gammas and measures the vertical component of the ground magnetic field. Readings on the magnetic survey were taken along the cut lines at a separation of 100 feet. Intermediate readings were taken where deemed necessary. The base station was set at station 72E-20S.

A maximum 100 gamma closed error was observed. Most of these errors seemed to come from the diurnal magnetic variation. The variation of ground magnetic readings changes from -100 gammas to 2,000 gammas and is much greater than such errors. Therefore, no correction was made on ground magnetic readings as such corrections would not have a significant effect on the interpretation.

As the surveyed area at Moosehorn property (1972 Sullivan Rodgers -SUMAC-) is adjacent to the area surveyed in 1973, it is advantageous to prepare a compilation map of both sets of results. In order to determine the constant between the base station used in 1972 and in 1973, several readings were taken along lines common to both surveys (base line from OE to 64E). The constant was derived from the mean value of the difference between the readings of in 1972 and that of in 1973 at the same station.

3-2 RESULTS AND ANALYSIS

Generally speaking, the readings were low in the southwest part

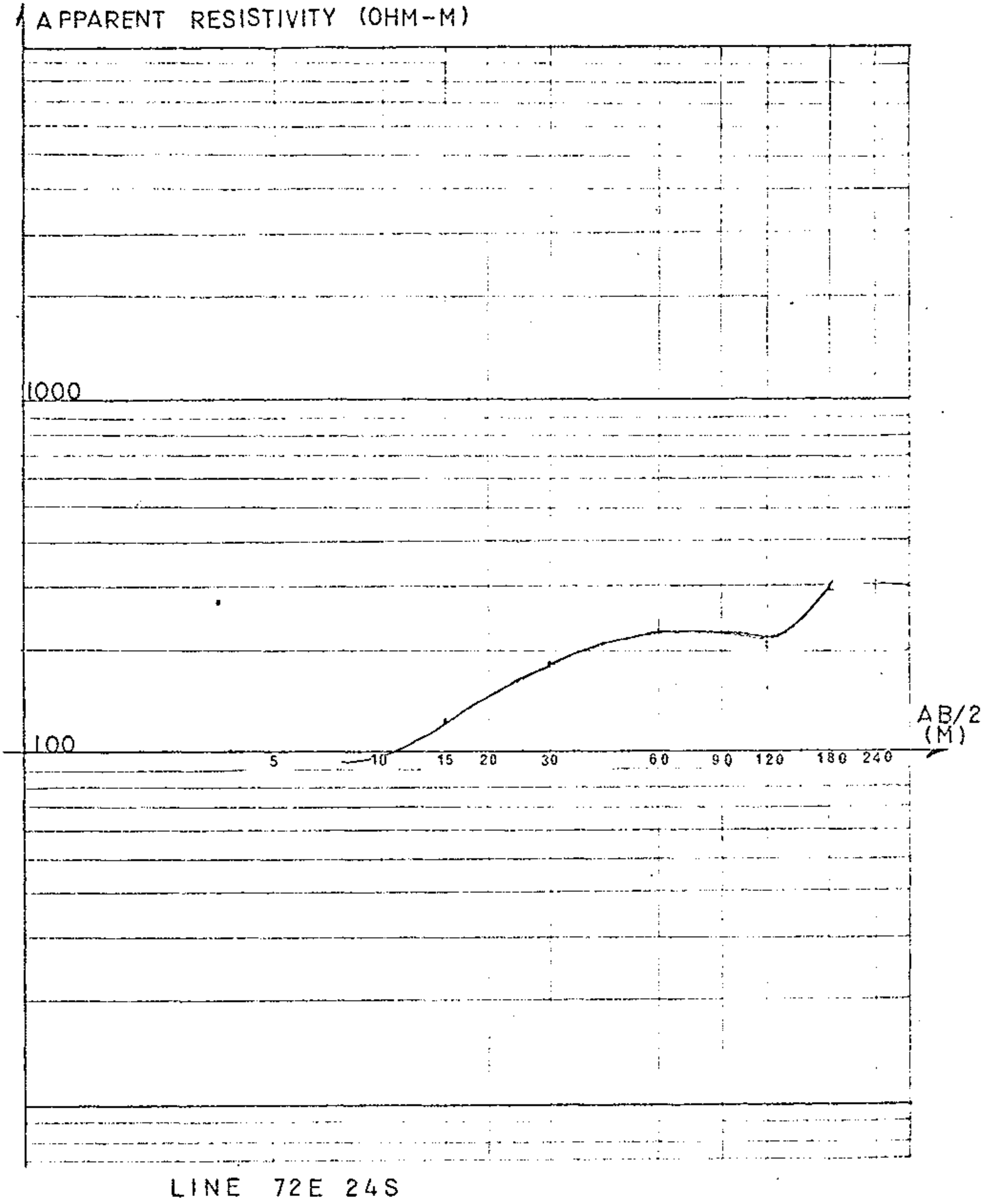
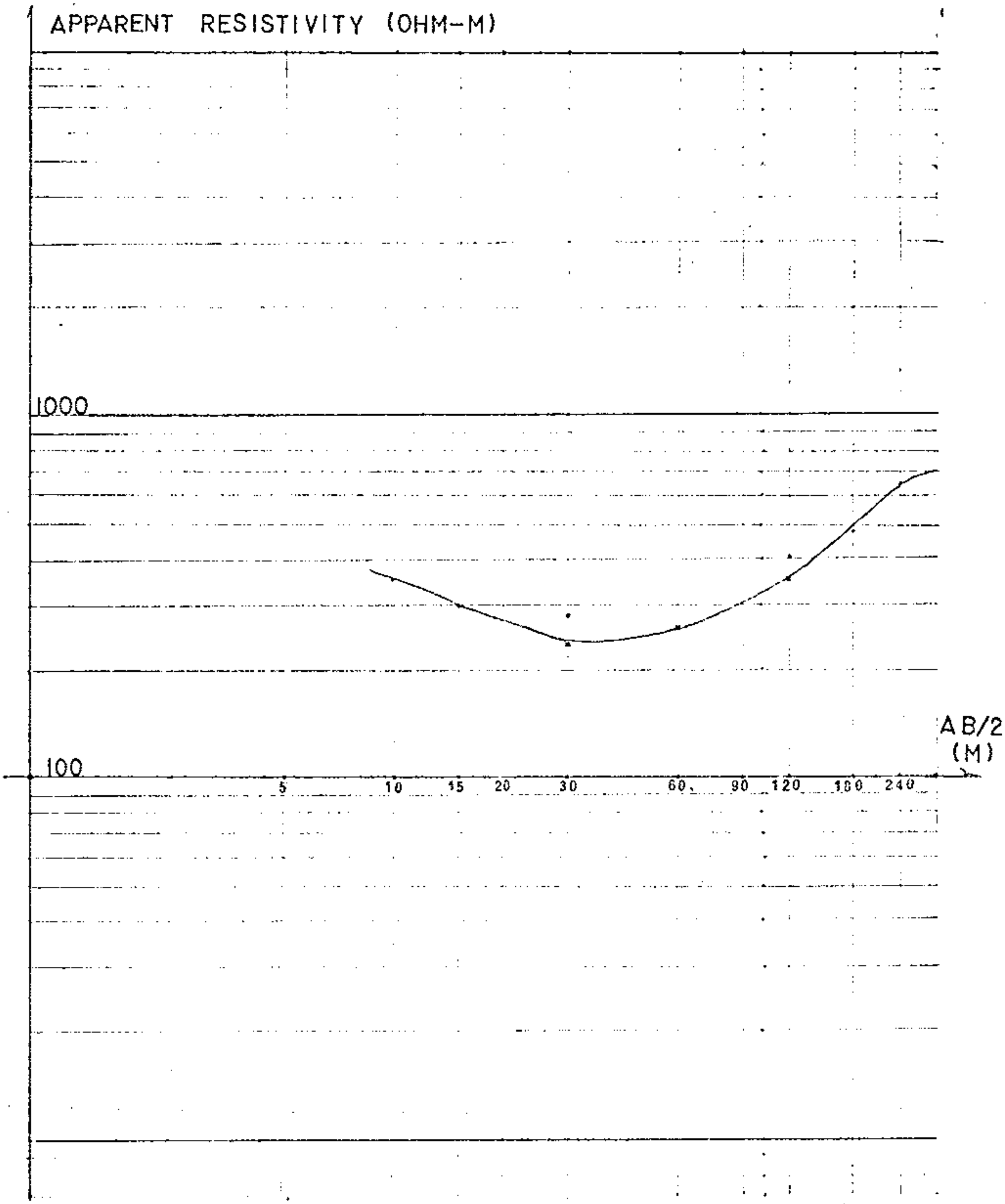

APPARENT RESISTIVITY (OHM-M)
1000
100
5
10
15
20
30
60
90
120
180
240
AB/2
(M)
LINE 72E 24S

FIG. 4-1



LINE 72E 22S

FIG. 4-2

4-2 RESULTS AND ANALYSIS

Figure 4-1 and figure 4-2 are graphs plotted on Log-Log scale of AB / 2 versus specific resistivity as detected by the Schlumberger array at station 72E-22S and 72E-20S.

Figure 4-4 shows the result of analysis by curve matching methods using standard curves and assistant curves (Ono's assistant curves). The observed relationship between apparent resistivities and structures is as follows:

RESISTIVITY (ohm-M)	STRUCTURE
Less than 100	swamp
200 - 400	glacial drift
Greater than 1000	andesite rock

At station 72E-24S, there is overburden cover which comprises of swamp to a depth of five meters and glacial drift to a depth of 200 feet. A causative structure for the I.P. phenomena occurs more than 200 feet below the surface.

Figure 4-3 is the graph of apparent chargeability by the Schlumberger arrangement plotted at 1":200' scale. Apparent chargeability values are plotted at the depth which corresponds to AB / 2 value. The chargeability value shows more than 5.0%, when AB / 2 is deeper than 200 feet. Thus, the I.P. anomaly was caused by a structure more than 200 feet deep.

APPARENT CHARGEABILITY BY SCHLUMBERGER ARRAY

LINE 72 E

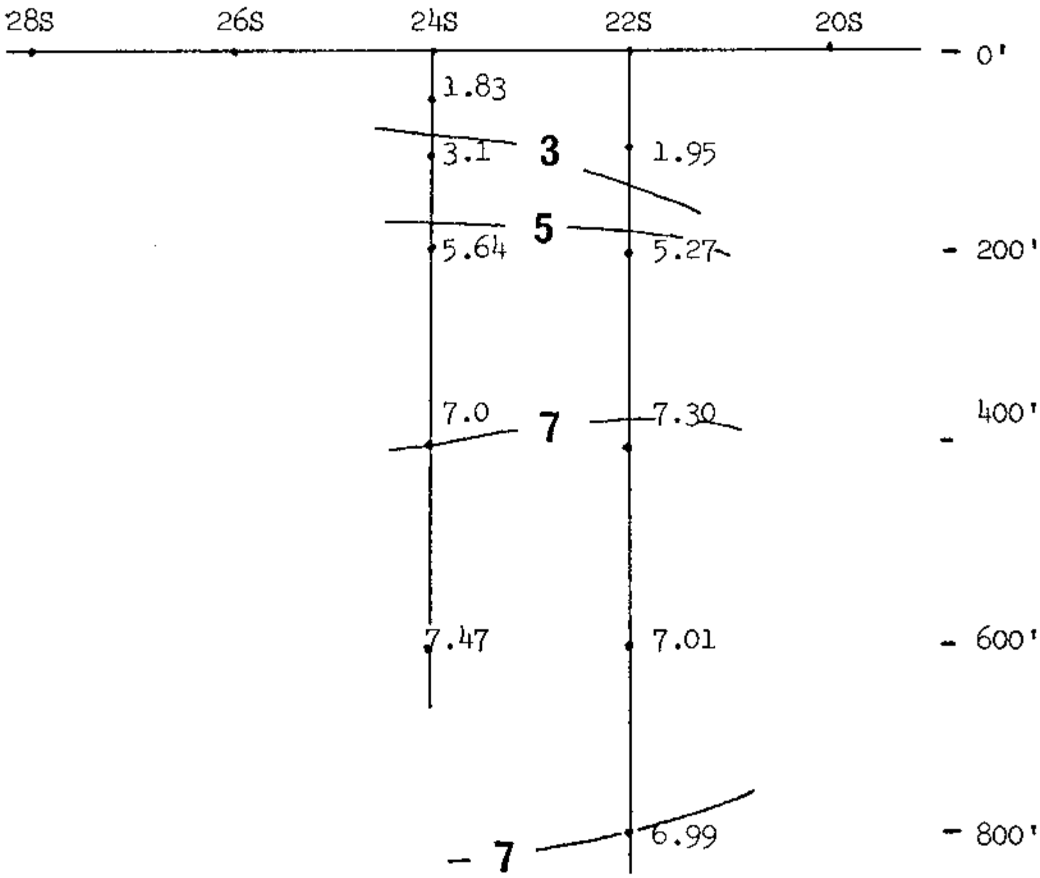


Fig. 4 - 3

WHERE :

SCALE	1" = 200'	
PLOTTED DEPTH	D = AB / 2	(M)
CHARGEABILITY	M = M3 + M4	

6. STATEMENT OF QUALIFICATIONS

1) I received a Bachelor of Science degree from Kyoto University in 1963 in Mining Engineering.

2) I received a Master of Technology degree from Kyoto University in 1965 in Applied Geophysics.

3) I continued my study on a Doctor's course at Kyoto University in Applied Geophysics from 1965 to 1967.

4) Since 1967, I have been employed as a geophysicist by Sumitomo Metal Mining Co. Ltd. and have worked in many countries (Japan, Canada, Malaysia, Phillipines, Taiwan and Australia). I have conducted most types of geophysical surveys over a wide variety of geologic environments.

5) Since 1970, I have been holding an additional post, in the computor section of Sumitomo Metal Mining Co. Ltd., as a senior systems engineer. This position involves working with data processing systems of geophysical survey, mining design, mining evaluation systems and many other kinds of systems.

Hidetaka Yoshida

Hidetaka Yoshida

October 1, 1973

I received a Bachelor of Technology degree from Kyushu University in 1971 in Applied Geophysics.

I have been employed on most types of geophysical work since graduation, for Sumitomo Metal Mining Co. Ltd.

Kiyoshi Kawasaki

Kiyoshi Kawasaki

October 1, 1973

T. Rodger
15.X.73

eastern boundary of a high apparent resistivity zone. This anomaly does not have a significant relationship with the ground magnetics. Therefore, it seems to be caused by a different type of rock or structure when compared with anomalies A, B and C. The high chargeability means the rock contains a lot of sulphide minerals or other causative minerals. One drill hole is recommended in order to check this I.P. anomaly.

showing was found south of line 64E. It contains lead and zinc mineralization and may be related to the I.P. anomaly.

In order to investigate the possibility of an economic deposit, one drill hole is recommended.

c) Anomaly C

This anomaly is situated at the northern part of the property (station 96E-40N). It contains the highest values recorded on the I.P. survey (maximum 29.0% in chargeability) and is the most promising anomaly on the property.

In order to determine the depth and the size of the anomaly, a detailed survey was carried out using different electrode separation along line 96E from 0 to 60N.

Figure 211-GP-6 displays the result of the detailed survey. This I.P. anomaly seems to be caused by a structure, situated at station 96E-42N. The structure is 800 feet wide, dips at 45 degrees to the north, and is covered by less than 100 feet of overburden.

This anomaly is bounded by two magnetic anomalies. It is possible that they represent either wallrock alteration or the presence of magnetic dikes associated with the boundaries of the I.P. anomaly.

In order to investigate the possiblity of an economic deposit, one drill hole is recommended.

d) Anomaly D

This anomaly is situated at the eastern part of the property (station 144E-32S to station 152E-20S), and shows a very high I.P. apparent chargeability (a maximum of 26%). It is located along the

The anomaly does not extend to the west but continues to the grid southeast towards station 24E-24S. Although the value is not as high when compared with the other three anomalies (C, D, and B), it remains a promising anomaly.

In order to investigate the possibility of an economic deposit, two drill holes are recommended.

b) Anomaly B

This anomaly is situated at the center of the property. It extends from station 72E-20S to station 72E-26S, and consists of a maximum 8.0% in apparent chargeability.

The broad, wide shape of this anomaly seems to be caused by a deep structure. In order to determine the shape and the location of the structure which causes the I.P. anomaly, a detailed I.P. survey, using different electrode separations, was carried out on the line 72E from 0S to 26S.

Figure 211-GP-5 shows the section map of apparent chargeability and resistivity on line 72E. According to the section map of chargeability, the I.P. anomaly which consists of maximum 8.9% in apparent chargeability, is situated at station 72E-22S. It is at a depth of 200 feet but becomes shallower towards the south.

The electrical sounding survey was carries out at stations 72E-20S and 72E-22S by using Schlumberger method to determine the depth of overburden. (See page 20)

This anomaly is covered by 200 feet of overburden which consists of swamp (5 meters deep) and glacier drift (around 200 feet deep). One

2-4 RESULTS AND ANALYSIS

1) Resistivity (See Figure 211-GP-1)

There are three high resistivity zones (300 - 1,500 ohm-ft/2π) on the property. These zones extend from station 24E-12N to station 0-4N, from station 80E-32N, and from station 128E-28N to station 136E-28N. The features of the apparent resistivity look very similar to a porphyry copper area; that is, where the granitic intrusive rock (high resistivity) is surrounded by volcanic or sedimentary rocks (low resistivity). It is very interesting to note that I.P. anomalies occur along the perifery of high apparent resistivity zones. The apparent resistivity, when used alone, has little significance as a direct tool for identifying a disseminated type of ore body. The resistivity results, do however, contribute to the exploration by outlining the rock boundaries unless topography prevents the geophysicist from discrimination.

2) Chargeability (See Figure 211-GP-2A)

The highest value observed in this property is 25% in apparent chargeability and values of more than 5.0% could be called anomalous. Four anomalies were detected on the property, these were named A, B, C and D from the west to the east.

a) Anomaly A

This anomaly is situated at the south-western corner of the property (station 8W-12N to station 24E-24S).and is the strongest anomaly to be located on the property in 1972 (Sullivan Rodgers -SUMAC-). The survey lines were extended towards south and west in order to examine the shape and size of the anomaly.

The following personnel were associated with the geophysical surveys:

HIDETAKA YOSHIDA	GEOPHYSICIST AND I.P. OPERATOR
KIYOSHI KAWASAKI	GEOPHYSICIST AND I.P. OPERATOR
INGO JACKISCH	I.P. HELPER AND MAGNETOMETER OPERATOR
PETER GRAY	I.P. HELPER
SUDHAKAR VULIMIRI	I.P. HELPER
T. CAMERON SCOTT	I.P. HELPER (GEOLOGIST)

OCTOBER 1, 1973
VANCOUVER, B. C.

RESPECTFULLY SUBMITTED

Hidetaka Yoshida

Hidetaka Yoshida, M. Tech.
Geophysicist

Kiyoshi Kawasaki

Kiyoshi Kawasaki, B. Sc.
Geophysicist

it is still quite promising.

The following drill holes are recommended to examine this anomaly:

Drill Hole 3:	Location	line OE-6S
	Dip	45°
	Direction	215° (true)
	Length	800 feet
Drill Hole 4:	Location	line 8E-18S
	Dip	45°
	Direction	215° (true)
	Length	800 feet

4) Anomaly D

This anomaly contains very high apparent chargeability readings. One drill hole is recommended to examine this anomaly:

Drill Hole 5:	Location	line 152E-12S
	Dip	45°
	Direction	215° (true)
	Length	400 feet

5. CONCLUSIONS AND RECOMMENDATIONS

There are four promising anomalies on Moosehorn property. In order to examine the nature of the causative bodies which create these four anomalies, five drill holes are recommended.

1) Anomaly C

This is the most promising anomaly on this property. Anomaly C shows the highest apparent chargeability in the property and is associated with two interesting magnetic anomalies.

The following drill hole is recommended to examine this anomaly:

Drill Hole 1:	Location	line 96E-45N
	Dip	45°
	Direction	215° (true)
	Length	800 feet

2) Anomaly B

This anomaly is deeper than the other anomalies and seems to be covered with around 200 feet of overburden. However it still displays very strong I.P. readings. Some mineralized outcrop has been found near this anomaly.

The following drill hole is recommended to examine this anomaly:

Drill Hole 2:	Location	line 72E-19S
	Dip	45°
	Direction	215° (true)
	Length	800 feet

3) Anomaly A

This anomaly was the highest detected on the Moosehorn property in 1972 and according to the I.P. and ground magnetic surveys in 1973,

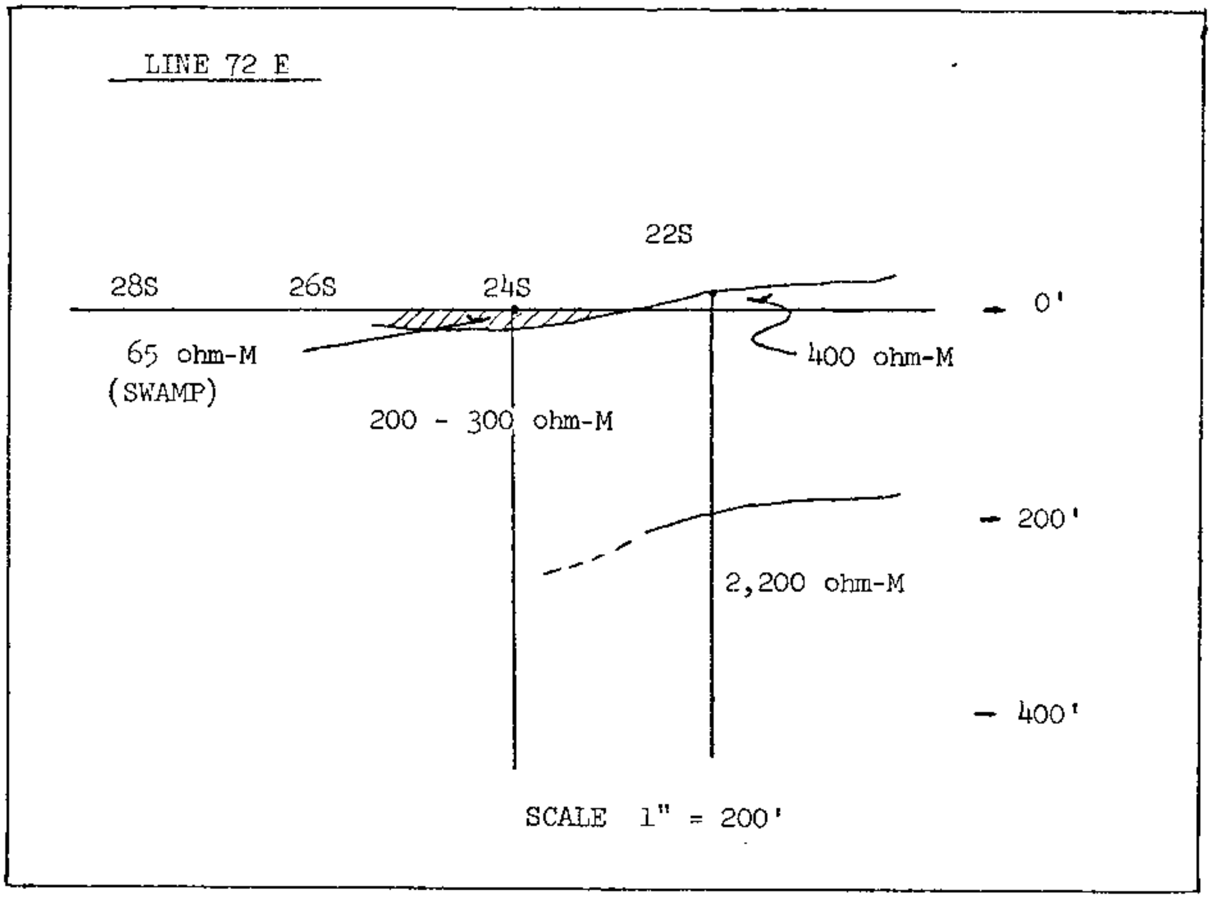

LINE 72 E
22S
28S
26S
24S
0'
65 ohm-M
(SWAMP)
400 ohm-M
200 - 300 ohm-M
200'
2,200 ohm-M
400'
SCALE 1" = 200'

Fig. 4 - 4

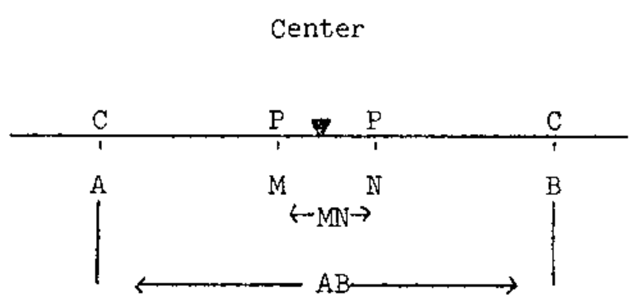
4. VERTICAL ELECTRICAL SOUNDINGS (See Figure 4-1 to 4-4)

4-1 INTRODUCTION

The I.P. anomaly (B), which is located at station 72E-22S, indicates broad causative body with a maximum 8.0% in chargeability. These features seemed to be caused by a deeper structure than others. An electrical sounding method was carried out to determine the depth of overburden by using Schlumberger method at stations 72E-20S and 72E-22S.

Following figure shows the Schlumberger electrode arrangement.

SCHLUMBERGER ARRANGEMENT



C: Current electrode

P: Potential electrode

1, 5, and 10 meter potential electrode separations were adopted for MN / 2, while current electrode separations of 5, 10, 15, meter and 100', 200', 400', 600', and 800' were used for AB / 2.

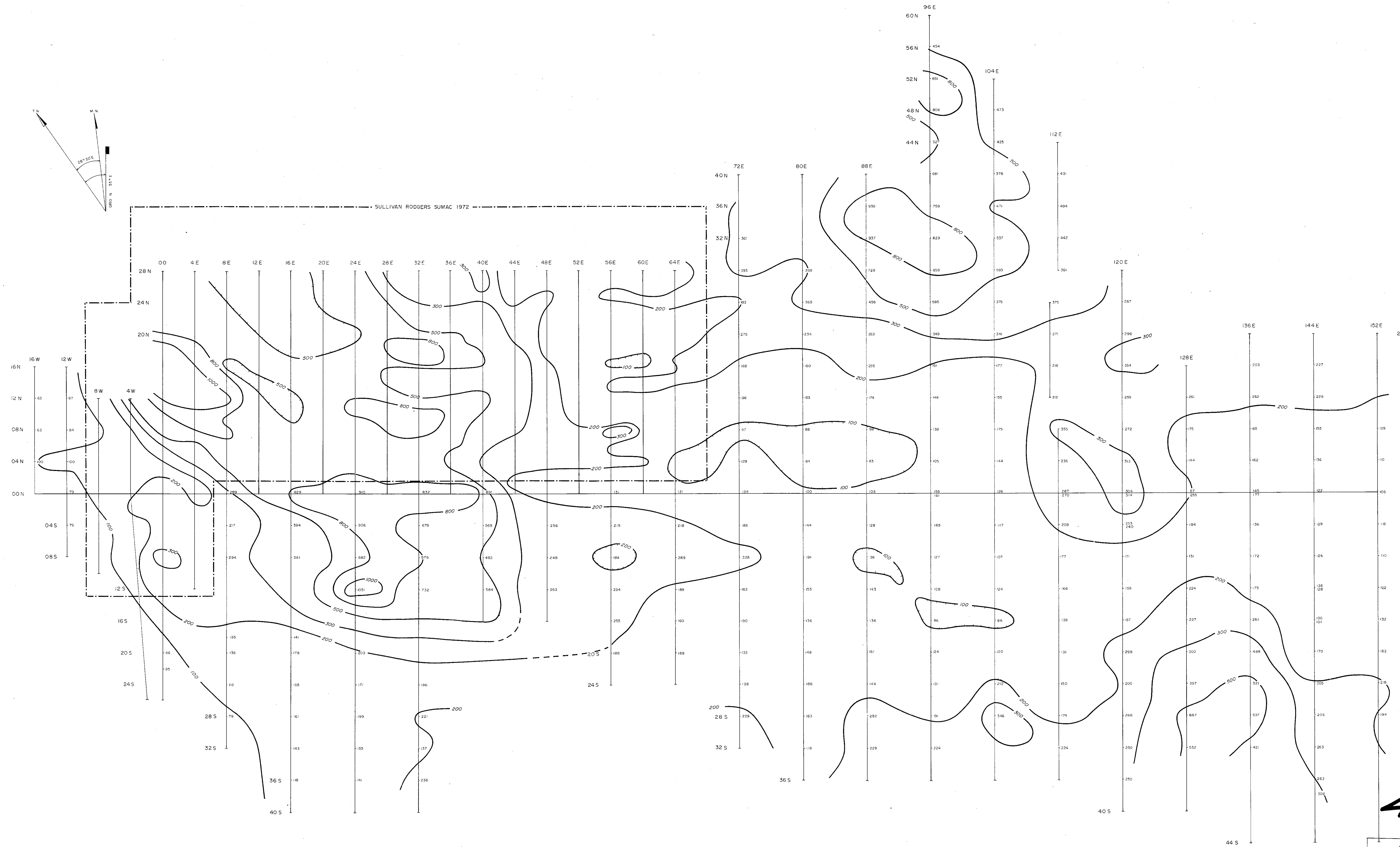
The Huntec MK III transmitter and receiver were used for the current source and the potentiometer respectively. The apparent resistivity and the apparent chargeability, using the Schlumberger electrode array, were read at every AB station.

Figure 222-GP-1). This indicates that magnetic anomaly (MA) is caused by the boundary between two rock types.

Magnetic and non-magnetic andesitic lavas are distributed throughout the whole area. From a geophysical point of view, anomalies due to the magnetic andesites can be discriminated from the others; the former contain a considerable amount of magnetite and exhibit high resistivity, while the latter are less magnetic and exhibit low resistivity.

The magnetic anomaly (MC) is considered to be caused by the magnetic andesite. The zone where there is large I.P. anomaly associated with low magnetic readings (station 152E-0N to station 144E-8S) seems to be caused by the non-magnetic andesite.

The magnetic survey is not a direct tool at all in this property because a great amount of magnetite is found in exposures and floats of andesitic rock on the hill sides.



4592
M1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #1

To accompany assessment report by
T.Rodgers P.Eng., October 1973

SULLIVAN RODGERS

SUMAC - 211

MOOSEHORN - JUG - SUM GROUPS

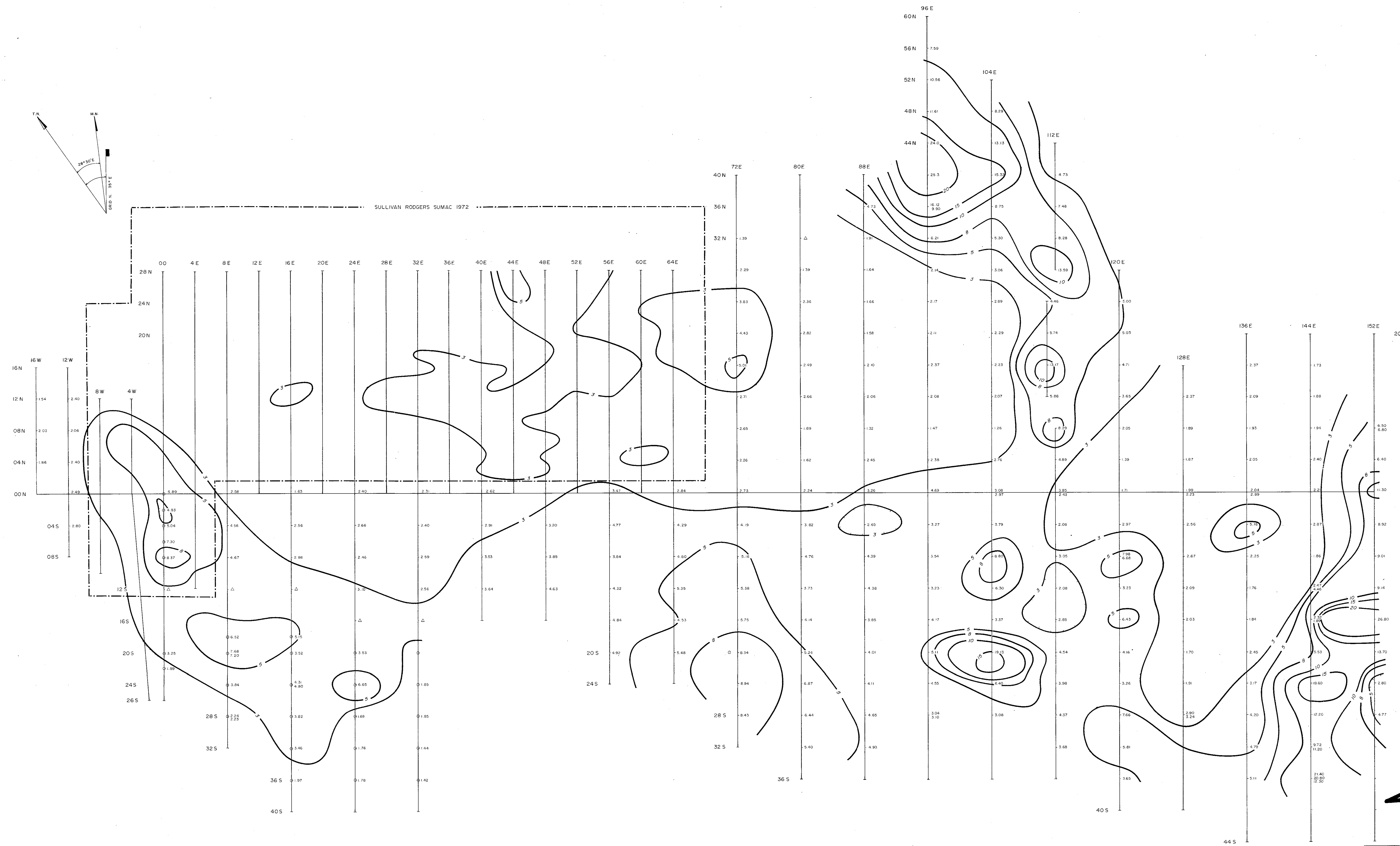
APPARENT RESISTIVITY

UNIT : OHM - FEET / 2π

FEET 0 400 800
METERS 0 50 100 200

Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. 211-GP-1

SULLIVAN RODGERS SUMAC 1972
4592
M2
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #2
To accompany assessment report by
T. Rodgers P.Eng. October 1973
SULLIVAN RODGERS
SUMAC - 211
MOOSEHORN-JUG-SUM GROUPS
APPARENT CHARGEABILITY
(M3 + M4)
UNIT : %
FEET 0 400 800
METERS 0 50 100 200
Date: AUGUST 1973
Scale: 1" = 400'
N.T.S. 94 E 6/E
Map No. 211-GP-2A



4592
M3

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #3

T. Rodgers

To accompany assessment report by
T. Rodgers P.Eng., October 1973

SULLIVAN RODGERS

SUMAC - 211

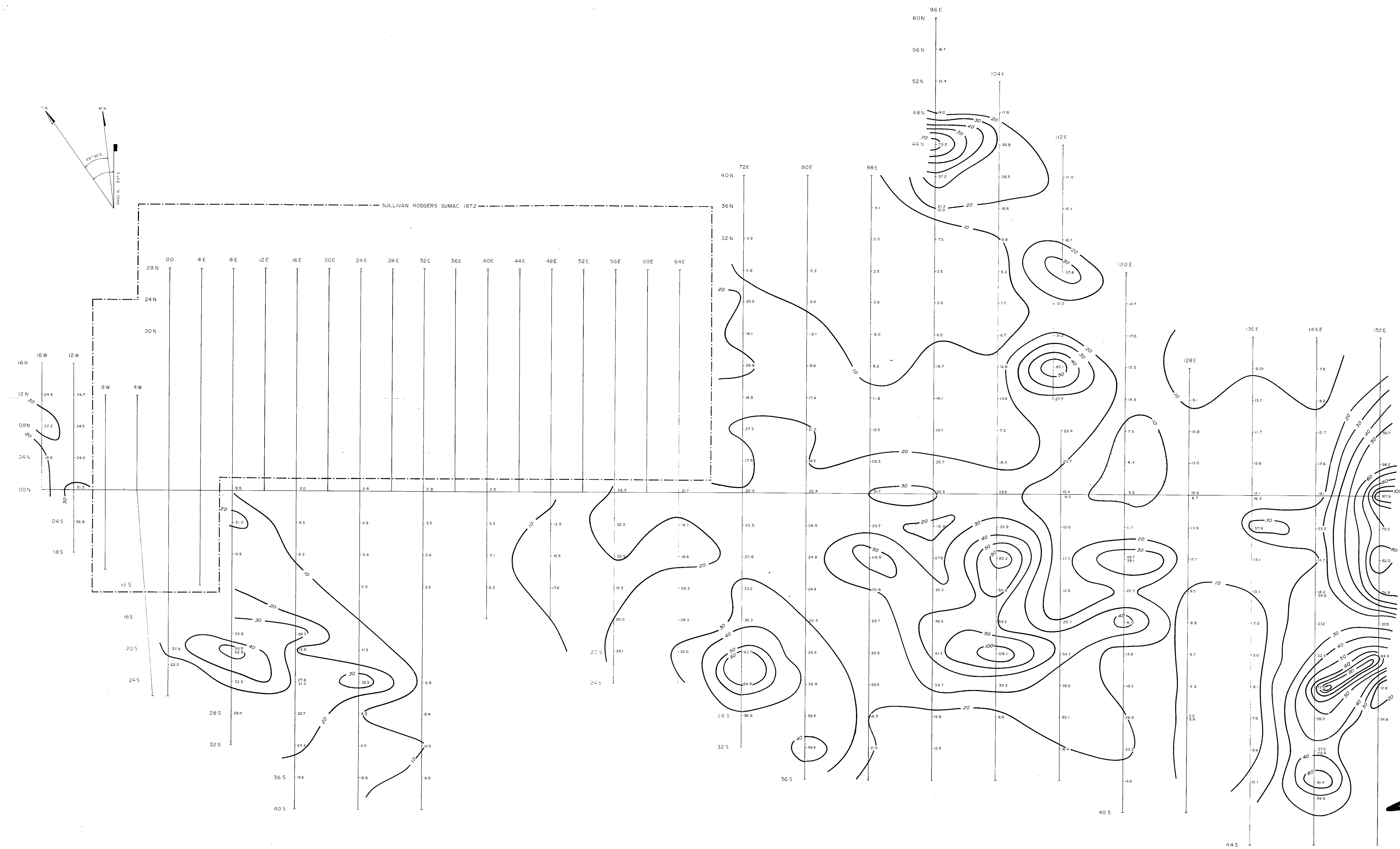
MOOSEHORN - JUG - SUM GROUPS

APPARENT CHARGEABILITY
(M2 + M3)

UNIT : %

FEET 0 400 800
METERS 0 50 100 200

Date. AUGUST 1973	Scale 1" = 400'	N.T.S 94 E 6/E	Map No. 211-GP-2B



4592
M4

To accompany assessment report by
T.Rodgers P.Eng., October 1973

SULLIVAN RODGERS

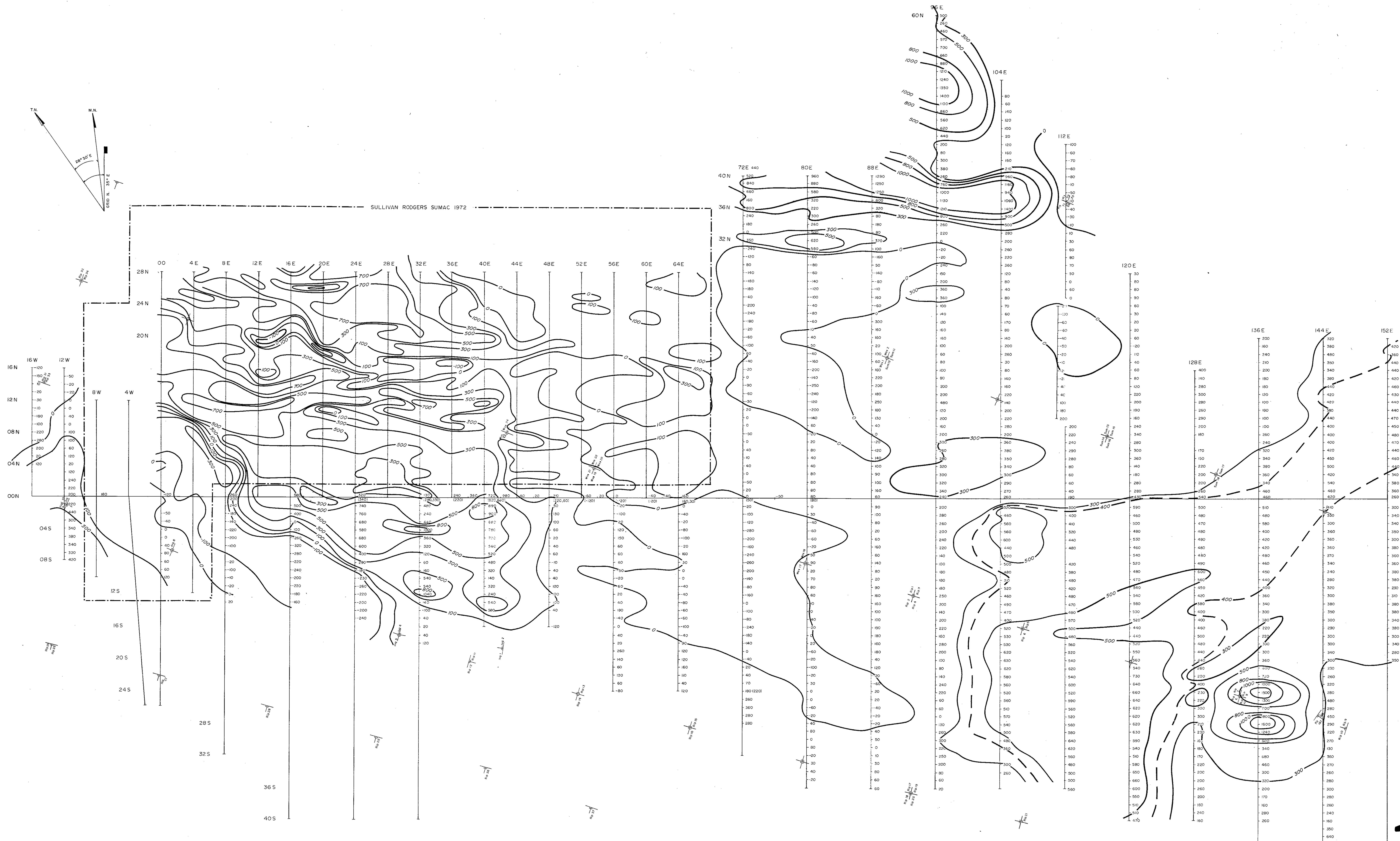
SUMAC - 211

MOOSEHORN-JUG-SUM GROUPS

(CH./APP.-RESISTIVITY) X 1000.0

FEET 0 400 800
METERS 0 50 100 200

Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. 211-GP-3



4592
M5

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #5

T Rodgers

To accompany assessment report by
T. Rodgers P.Eng., October 1973

SULLIVAN RODGERS

SUMAC - 211

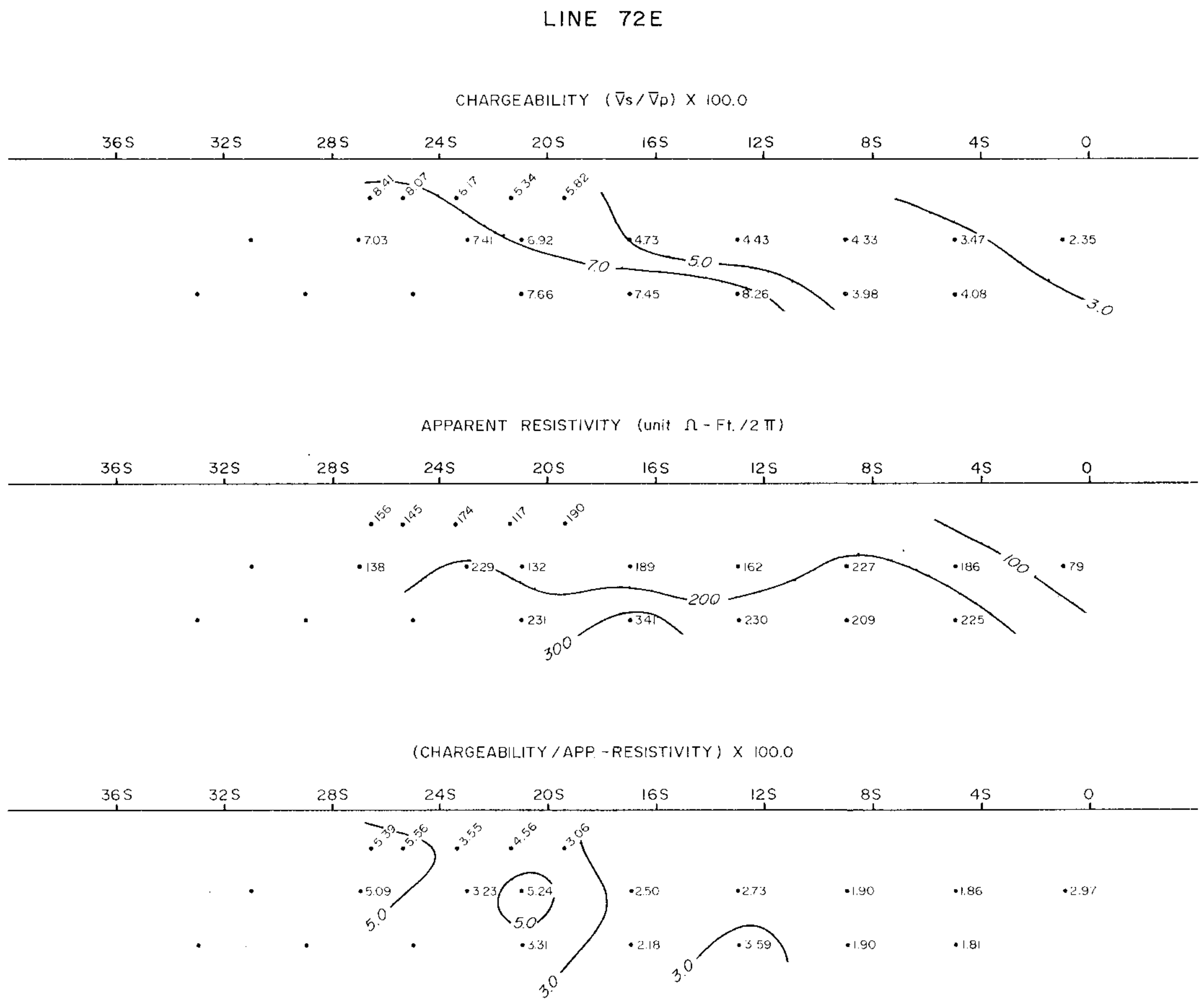
MOOSEHORN-JUG-SUM GROUPS

GROUND MAGNETIC SURVEY

VERTICAL MAGNETIC COMPONENTS
IN GAMMAS (γ)

FEET 0 400 800
METERS 0 50 100 200

Date AUGUST 1973	Scale " = 400'	N.T.S. 94 E 6/E	Map No. 211-GP-4



4592
M6

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #6

T. Rodgers

To accompany assessment report by
T. Rodgers P.Eng., October 1973

SULLIVAN RODGERS

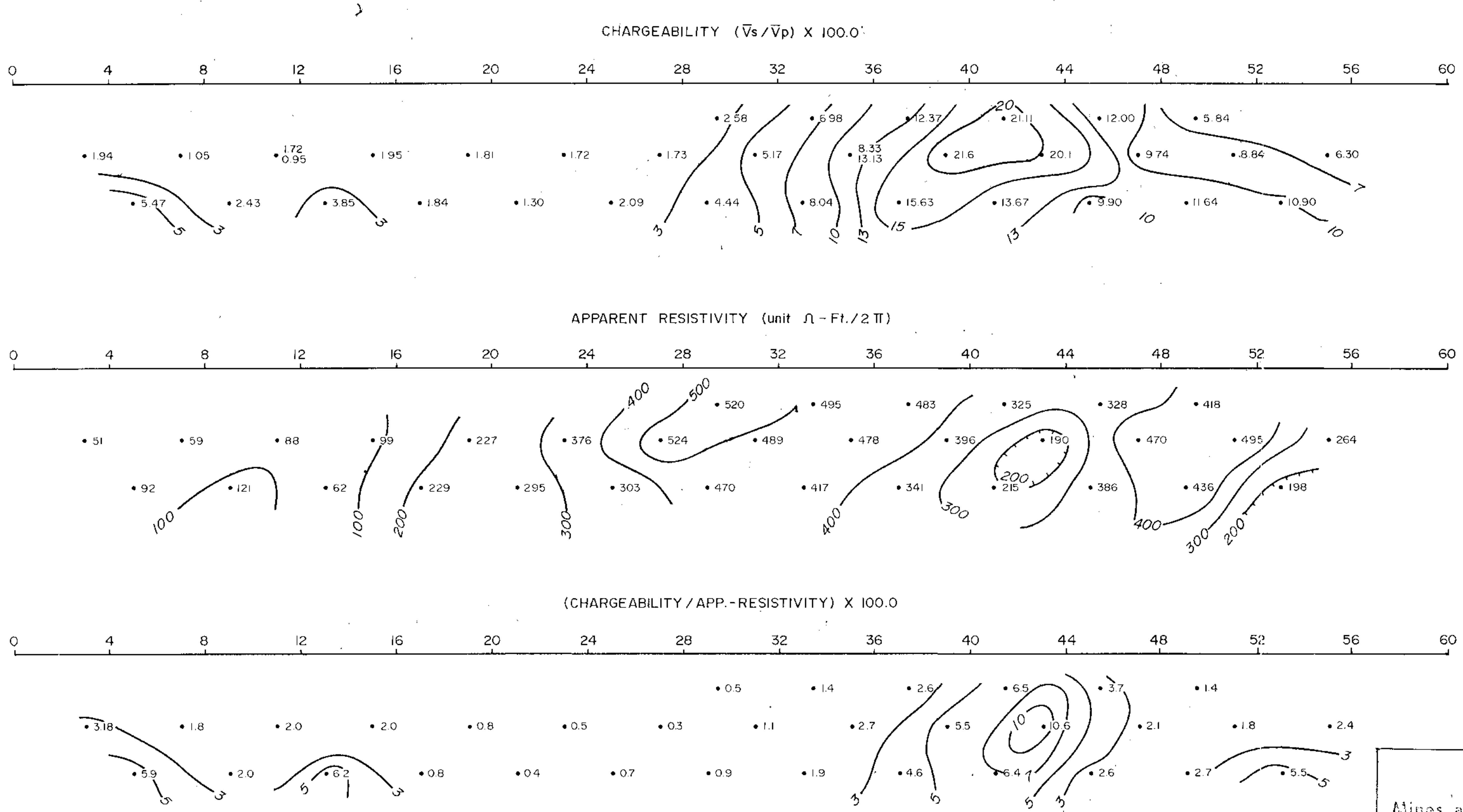
SUMAC - 211

MOOSEHORN - JUG - SUM GROUPS

DETAIL SECTION AT LINE 72 E

Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. 211 - GP - 5

LINE 96E



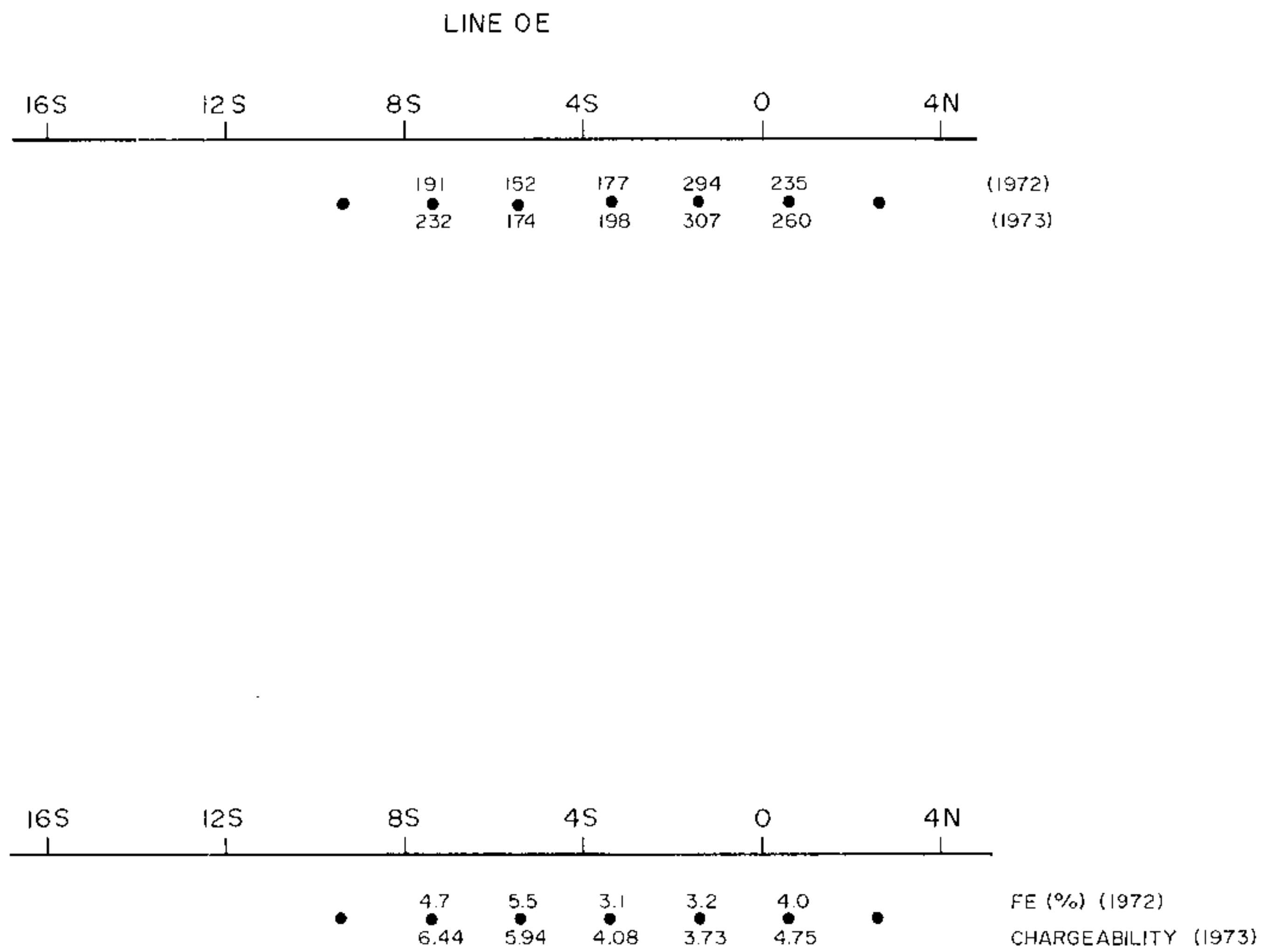
4592
M7

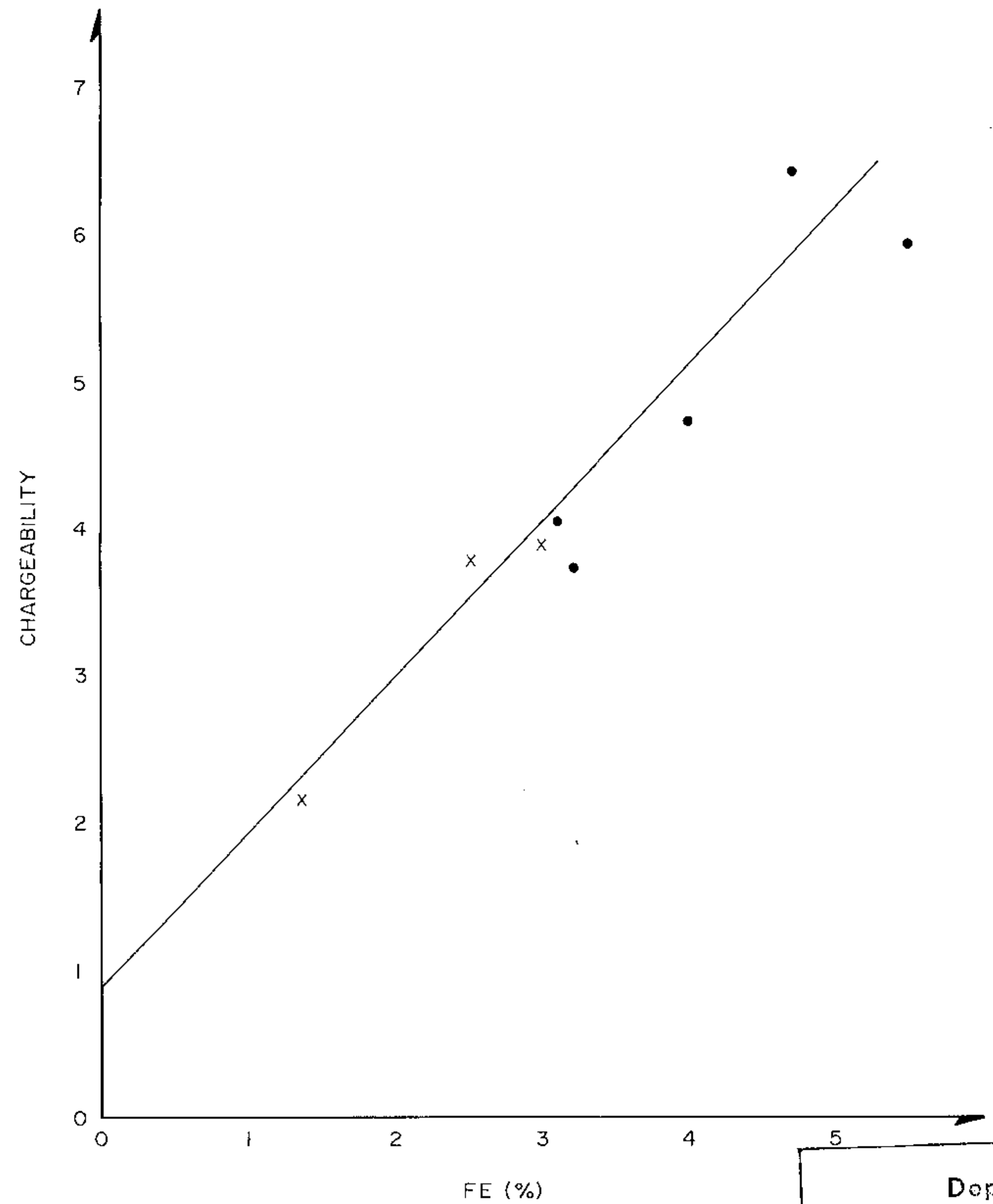
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #7

T. Rodgers

To accompany assessment report by
T. Rodgers P.Eng., October 1973

SULLIVAN RODGERS			
SUMAC - 211			
MOOSEHORN - JUG - SUM GROUPS			
DETAIL SECTION AT LINE 96 E			
Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. 211 - GP - 6





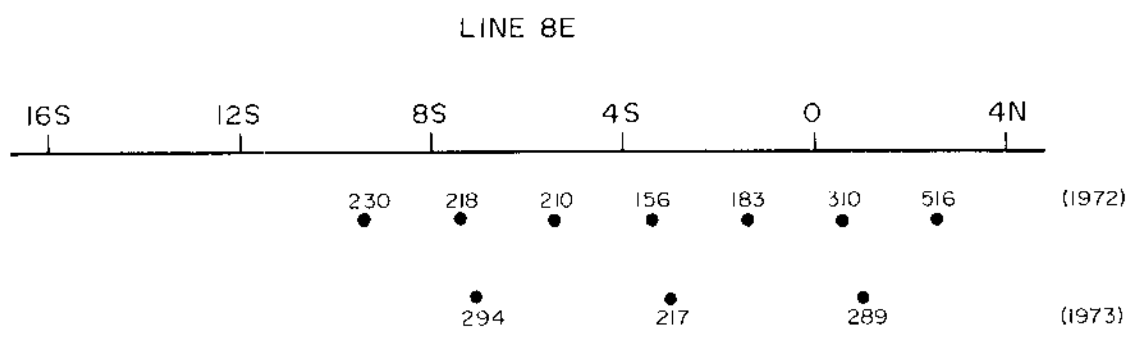
4592
M8

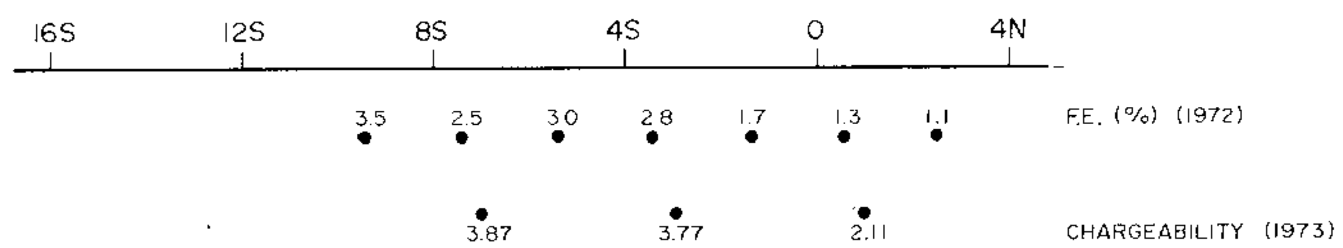
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #8

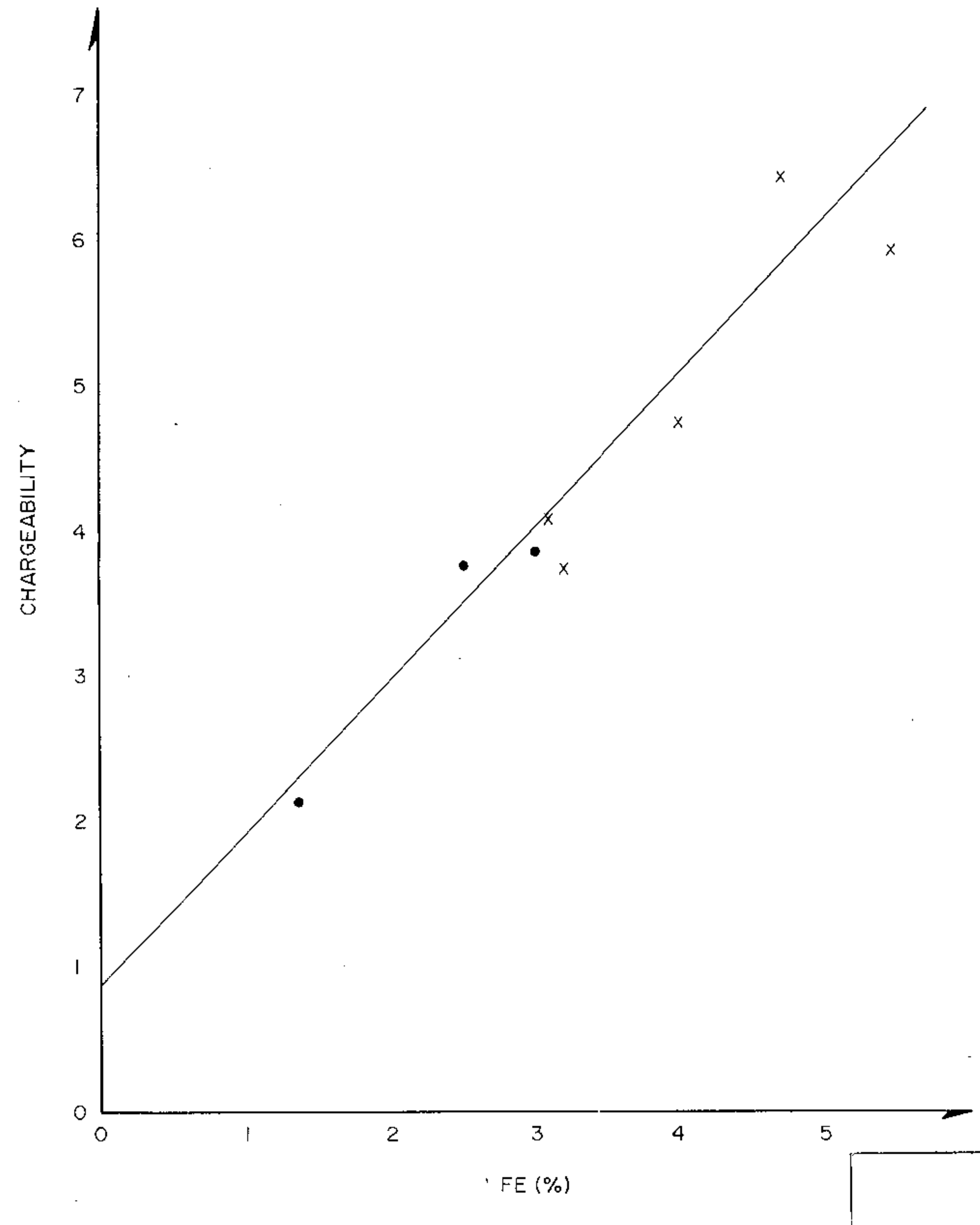
T. Rodgers

To accompany assessment report by
T.Rodgers P.Eng., October 1973

SULLIVAN RODGERS			
SUMAC - 211			
MOOSEHORN - JUG - SUM GROUPS GRAPH OF CHARGEABILITY - F.E. (%) AT LINE O			
Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. FIG 2-1







F.E. (%)		CHARGEABILITY
$\frac{1.7+1.3+1.1}{3.0}$	= 1.37 :	2.11
$\frac{3.0+2.8+1.7}{3.0}$	= 2.50 :	3.77
$\frac{3.5+2.5+3.0}{3.0}$	= 3.00 :	3.87

4592
M9

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4592 MAP #9

T Rodgers

To accompany assessment report by
T. Rodgers P.Eng., October 1973

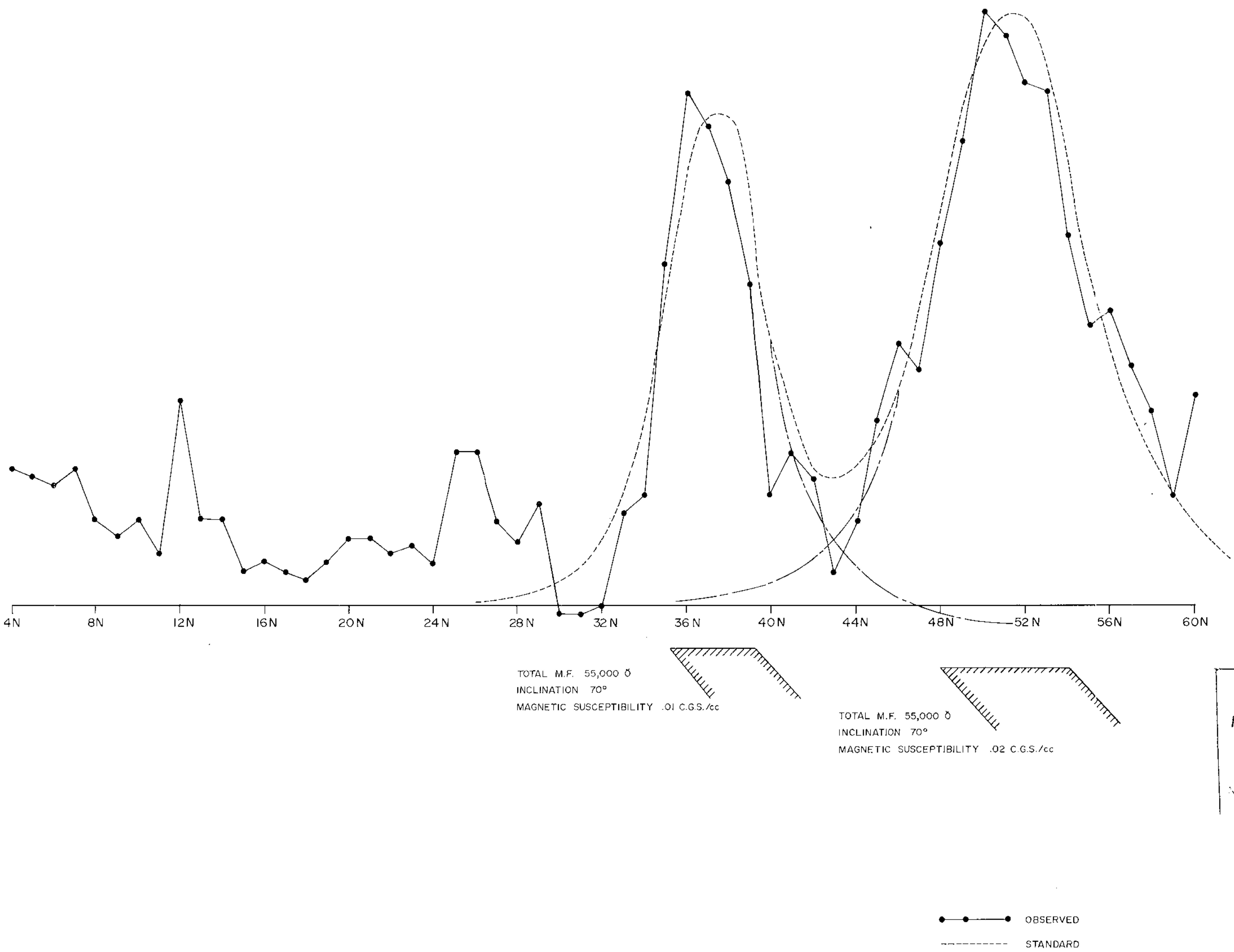
SULLIVAN RODGERS

SUMAC - 211

MOOSEHORN - JUG - SUM GROUPS

GRAPH OF CHARGEABILITY - F.E. (%)
AT LINE 8E

Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. FIG. 2-2



4592
M10

T Rodgers

To accompany assessment report by
T. Rodgers P.Eng. October 1973

SULLIVAN RODGERS

SUMAC - 211

MOOSEHORN - JUG - SUM GROUPS

MAGNETIC SURVEY
AT LINE 96E

Date: AUGUST 1973	Scale: 1" = 400'	N.T.S. 94 E 6/E	Map No. FIG. 3-1