

290

KENNCO EXPLORATIONS, (WESTERN) LIMITED

REPORT

GEOCHEMICAL AND GEOPHYSICAL SURVEYS

ON THE

K.T.I. No. 1 Claim Group  
K.T.I. No. 2 Claim Group  
I.W. No. 1 Fr. Mineral Claim

Two miles northwest of Gnawed Mtn.  
Highland Valley Area  
British Columbia

50° 121° S.E.

by

R. W. Stevenson

June 2 - September 6, 1959

KENNCO EXPLORATIONS, (WESTERN) LIMITED

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List of Claims and Distribution of Work

<u>Claim Group</u>	<u>Claim</u>	<u>Tag No.</u>	<u>Distribution of Work</u>		<u>Years Work Claimed</u>	<u>Total</u>
			<u>Geochemical</u>	<u>Geophysical</u>		
K.T.I.No.1	KEN 21	275095	8.00	133.00	2	
	KEN 22	275096	8.00	133.00	2	
	KEN 23 Fr.	275097	42.00	290.70	2	
	KEN 24	275098	54.00	193.80	2	
	KEN 25	275099	20.00	199.50	2	
	KEN 26	275100	10.00	123.50	2	
			<u>\$142.00</u>	<u>\$1073.50</u>	<u>12</u>	<u>\$1215.50</u>
K.T.I.No.2	T.M. 1	354102	56.00	209.00	2	
	T.M. 2	354103	44.00	152.00	2	
			<u>\$100.00</u>	<u>\$361.00</u>	<u>4</u>	<u>\$ 461.00</u>
I.W.No.1 Fr. M.C.	I.W. 1 Fr.	354101	\$ 22.00	\$ 94.75	1	\$ 116.75

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## Introduction

The claim groups discussed in this report are located about two miles northwest of Gnawed Mountain, which is on the south side of the Highland Valley, about 24 miles southeast of Ashcroft, B.C. The exploration work was done on these properties by Kennco Explorations, (Western) Limited in conjunction with work on an optioned property to the east. The work included geochemical (soil), induced polarization, and self potential surveys, and was done intermittently between June 2 and September 6, 1959.

The geochemical sampling was done by G. Rayner, G. Antenbring, J. Barakso, and G. Delane; under the supervision of R.W. Stevenson. The geophysical work was done by R. MacDougall, R. Roadhouse, H. McGladdery, F. Bara and A. Ablett, under the supervision of Dr. D. A. Hansen. Line-cutting was done by G. Rayner, G. Antenbring, J. Barakso, A. Drummond, G. Bara and G. Delane, under supervision of R. W. Stevenson. As cutting of the control lines proceeded or was completed, various members of the crew commenced the survey work as noted above.

## Location and Access

The claims are located at latitude 50°25'N; longitude 121°01'W. They are on the lower northwest slope of Gnawed Mountain, which is on the south side of the Highland Valley, about 24 miles southeast of Ashcroft, B.C. Elevation is about 5,000' a.s.l. The topography is gently undulating, except for a few hills caused by terminal moraines and banks of glacial outwash. Most of the area is covered with open jackpine forest.

A good road extends to the Skeena Silver Mines camp, about two miles north of the claims. From there, a jeep road passes about one mile east of the claim area. The grid of blazed lines shown on the accompanying map connect with lines which extend out to this road.

## Field Procedures

Control Survey Lines: East-west lines were run by chain and compass to provide for control of the work. These lines were located from north-south base lines. On the K.T.I. No. 1 claim group, the east-west lines are 800' apart. On the K.T.I. No. 2 claim group, they are 400' apart. Only one line crosses the I.W. No. 1 fraction mineral claim. On the north end of the K.T.I. No. 1 claim group, one soil sample line was done by pace and compass traverse. Government maps were enlarged, and with the aid of air photos, a base map with scale of 1" = 1000' was completed.

Geochemical Survey: The geochemical work consisted of a soil sample survey. Two types of spacing were used in taking the samples. On a reconnaissance basis, samples were taken at 800' intervals on lines 800' apart. When further interest was suggested by anomalous soil results, samples were taken at 100' intervals on lines which were either 400' or 800' apart. Control was usually maintained by sampling on chain and compass lines, and on one line, by pace and compass traverse. Samples were taken from the "B" soil horizon wherever possible and analysed for copper by hot nitric acid extraction at the University of British Columbia geochemical laboratory. The results were plotted on the accompanying map (scale: 1" = 1000'), labeled Plate "A".

Geophysical Surveys: An induced polarization survey was done on the lines shown on the accompanying map labelled Plate "A". Dipole spacing was 500'. A Self Potential survey was done on lines where sharp breaks in earth potential were observed during the Induced Polarization survey. This is further discussed in the section on Geophysical Surveys.

#### Geochemical Survey

The usual background copper content of the soil is about 40 to 60 parts per million. As the copper content rises above 90 ppm, the sample is considered to be significantly anomalous. Factors such as drainage and depth of overburden also affect the anomalous copper value.

Only one large continuous soil anomaly was located. This is on claims Ken 21, 22, 23, and 24, in claim group K.T.I. No. 1. This is outlined in red on the accompanying map labelled Plate "A". These values presumably reflect very weak copper mineralization which has been observed in outcrops to the east. This interpretation is confirmed by the lack of geophysical response on these claims.

On the K.T.I. No. 2 claim group and the I.W. No. 1 Fractional claim, the anomalous soil values tend to be erratic. Anomalous samples are not continuous enough to allow correlation of results.

#### Geophysical Surveys

##### Induced Polarization.

Description of the method: Induced Polarization effects occur when there is a change in the method of electrical conduction in the ground. In ordinary earth materials conduction is by ions. Sulfides, native metals, graphite, magnetite, and other minerals with metallic lusters exhibit metallic conduction or conduction by electrons. If conduction paths

through the earth involve both types of conduction and direct current is used, the metallic conductors become blocked or polarized just as the electrodes in an electrolytic cell become polarized. This effect is known as interfacial polarization, over-voltage, or double-layer charging. Polarization does not occur with alternating current and the resistance of paths involving electronic conductors is accordingly less with alternating current than with direct current.

This effect is utilized in prospecting by making standard resistivity measurements first using direct current and then using alternating current. A decrease in apparent resistivity with the alternating current measurement is an indication of the presence of metallic conductors.

Two quantities are obtained from field measurements — the DC apparent resistivity designated  $\rho_{DC}$  and the AC apparent resistivity designated  $\rho_{AC}$ . The units of both of these quantities are ohm-feet divided by 2. From  $\rho_{DC}$  and  $\rho_{AC}$  two additional quantities are computed. These are the Percent Frequency Effect, PFE, and the Metallic Conduction Factor, MCF.

$$PFE = \frac{\rho_{DC} - \rho_{AC}}{\rho_{AC}}$$

and

$$MCF = \frac{PFE}{\rho_{DC}} \times 10^5$$

These two quantities are studied with the DC resistivity in arriving at an interpretation. The Percent Frequency Effect must be significantly greater than (a) instrumental precision and (b) background frequency effects of the area in order to be considered as indicative of metallic conduction. In some cases only  $\rho_{DC}$  and the MCF are presented in the data. It must then be established that the values given for the MCF are based upon significant frequency effects. Anomalous values of the MCF are considered to indicate metallic conduction, which may or may not consist of economic mineralization.

Presentation of Data: The method of presenting data is illustrated on the attached drawing. The end-on electrode arrangement is used with current applied to the earth through a long wire grounded at both ends of interval "a". The receiver consists of a suitable voltmeter grounded at both ends of interval "c". In practice the intervals a, b, c, ..... etc. are equal and vary from 100 to 1000 feet, depending on the problem at hand. With the Sender across interval "a" and the Receiver across interval "c", the values of the MCF are plotted at the point "a, c" below

the reference line and PDC is plotted at point "a,c" above the reference line. Points "a,c" are determined by the intersection of 45° diagonals drawn from the mid-points of Sender and Receiver intervals. The next reading would be taken with the same Sender position but with the receiver advanced to interval "d". The data for this arrangement are plotted at points "a,d". The Receiver is stepped outward until the observed voltage is too small for a reliable reading. The Sender is then advanced to interval "b" and the procedure with the Receiver is repeated.

The values plotted at the various points are then contoured, Percent Frequency Effects, if shown, appear as superscripts to PDC and are not contoured. The reference line on the drawing represents the line of electrodes on the ground. Electrical changes in the ground at increasingly greater distances away from the electrode line are indicated by the behavior of contours parallel to and away from the reference line. Lateral electrical changes along the line of electrodes are indicated by contours along the direction of a 45° diagonal.

As with other geophysical methods, experience is an important factor in the deduction of a valid interpretation.

Objectives of Survey. It was agreed that exploration would be confined to possible ore bodies which reached the sub-outcrop and which were two to three hundred feet in minimum horizontal dimension. For this situation 500 foot dipoles were used, with a maximum separation of 1500 feet. This configuration would effectively prospect the ground below and between grid lines 800 feet apart.

Results of Investigation:

Ground Coverage. The area covered by the Induced Potential survey is indicated on Plate "A". A total of 15,700 feet was surveyed with 500 foot dipoles.

Interpretation of Results: No strong induced polarization responses were obtained during the course of the survey. Slightly higher readings were obtained on lines 104N, 120N, and 152N. However, these are not significantly above background noise level.

Self Potential Surveys. In conducting the induced potential surveys occasional sharp breaks in earth potential were observed. Several lines were run in detail by the Self Potential method to check the existence of the fairly large potential variations. The lines surveyed are tabulated below:

<u>Line</u>	<u>From-To</u>	<u>Distance</u>
120N	84W- 96W	1200
112N	82W-102W	2000
104N	84W- 94W	1000
96N	92W- 97W	500
	Total	4700 feet

No self potential anomalies of significance were found. The noise level was generally in a plus or minus 20 millivolt range. Variations in this range are too small to be uniquely attributable to sulphide oxidations. Such variations may arise from local inhomogeneities in soil conditions such as pH, dissolved salts, water content, etc.

*R. W. Stevenson*

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R. W. Stevenson

Vancouver, B. C.

December 18, 1959

RECEIVED  
DEC 22 1959  
U.S. GEOLOGICAL SURVEY  
WASHINGTON, D.C.



KEN 26

KEN 26

PFE

*P*  
x

110W

105

100

95W

MCP

x  
6

x  
15

x  
9

x  
5

x  
8

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ASSESSMENT REPORT

NO.

290

M&P

#1

Keneco Explorations (Western) Limited

K.T.I. No. 1 Claim Group  
Induced Polarization Survey

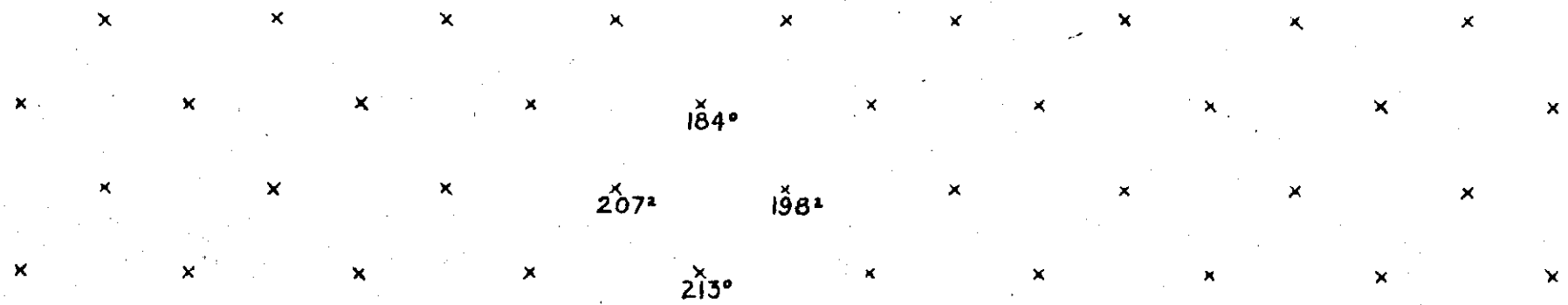
Line 80 N

Dec. 1959

Plate: B

Scale: 1" = 500'

*B. J. Stevenson*



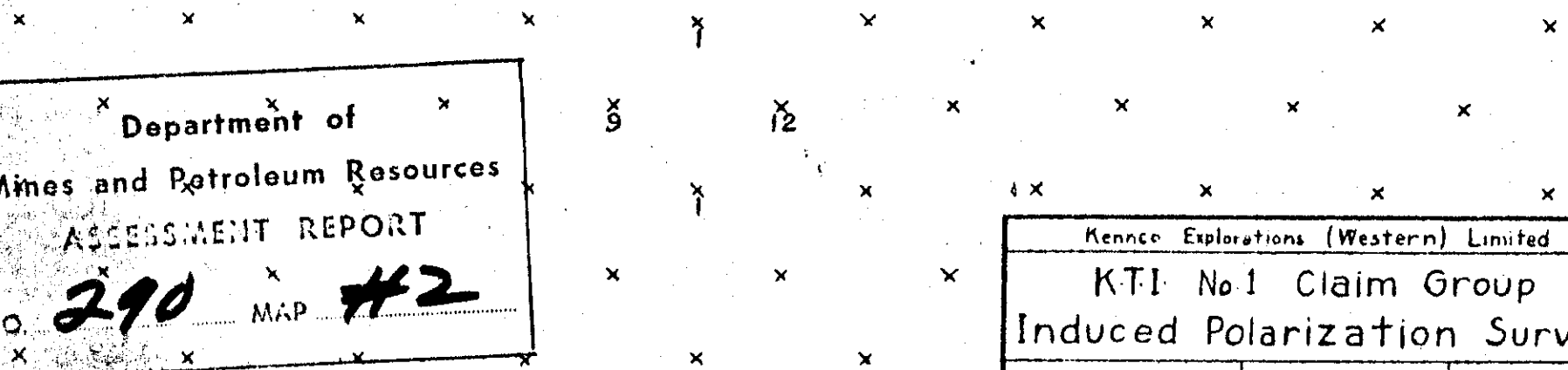
KEN 25

KEN 25

PFE  
P

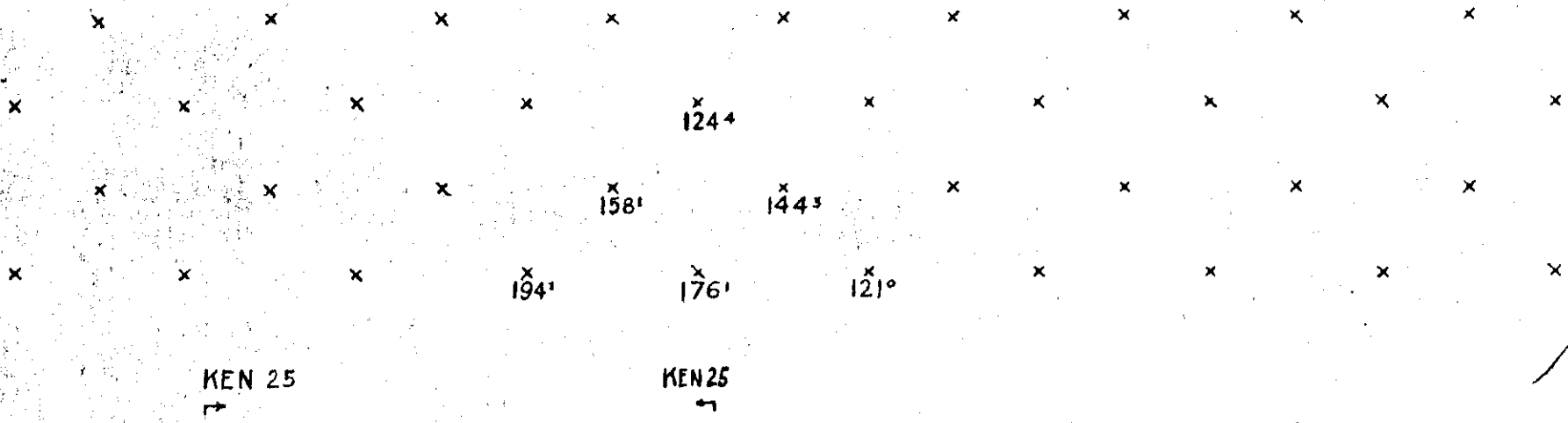
110W 105 100 95 90W

MCP



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NO. **290** MAP **#2**

Keneco Explorations (Western) Limited		
KTI No. 1 Claim Group Induced Polarization Survey		
Line 88 N	Dec. 1959	Plate: C
Scale: 1" = 500'	<i>R. W. Stevenson</i>	



KEN 25

KEN 25

PFE  
x

110W

105

100

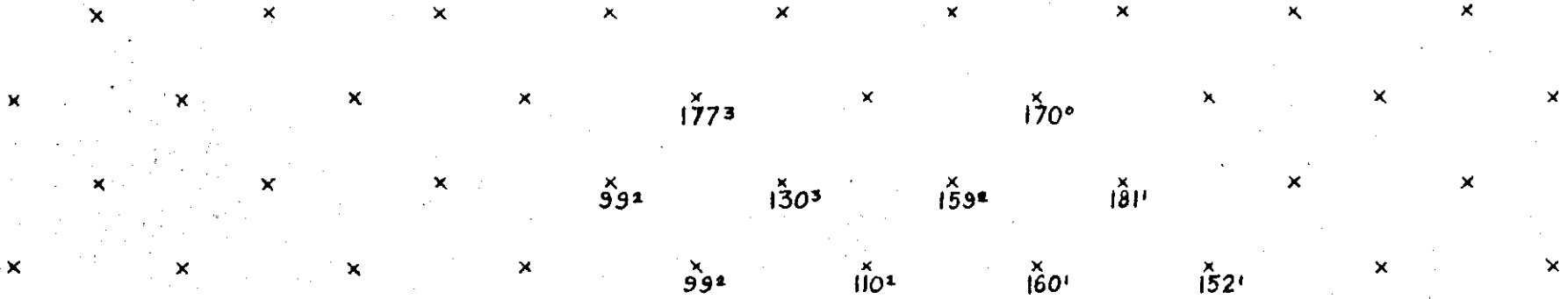
95W

90

MGP

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NO. **290** M&P **#3**

Keneco Explorations (Western) Limited		
KTI- No 1 Claim Group Induced Polarization Survey		
Line 96N	Dec. 1959	Plate D
Scale: 1" = 500'		



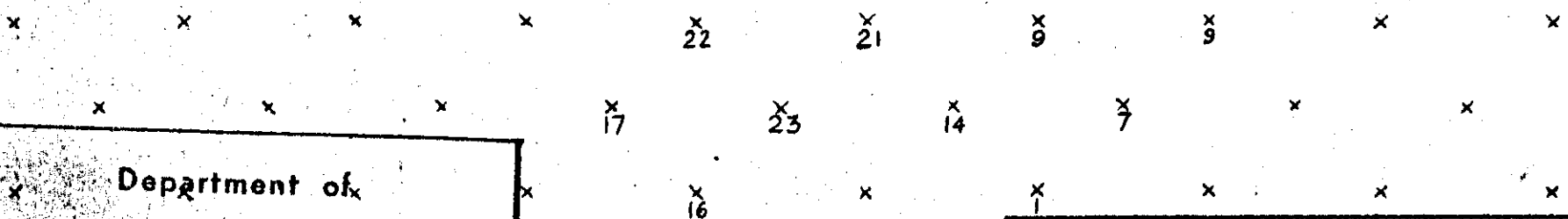
KEN 24

KEN 23

PFE  
P

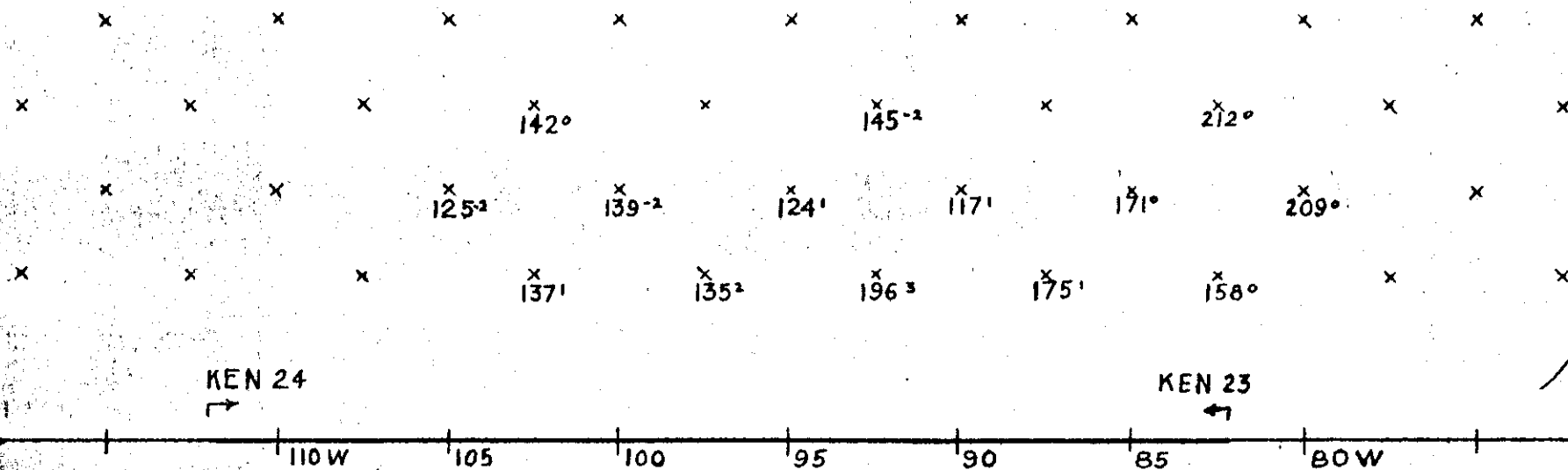
110W 105 100 95 90 85 80W

MGP



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NO. **290** MAP **#4**

Kennco Explorations (Western) Limited		
KTI No. 1 Claim Group Induced Polarization Survey		
Line: 104 N	Dec: 1959	Plate: E
Scale: 1" = 500'		<i>R. W. Stevenson</i>



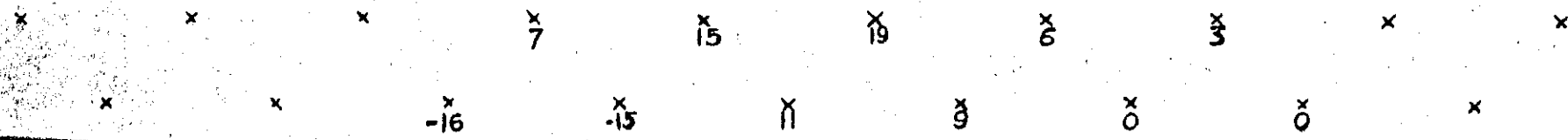
KEN 24  
↗

KEN 23  
↖

PFE  
x

110W 105 100 95 90 85 80W

MGP



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 NO. 290 M.P. #5

Keneco Explorations (Western) Limited		
KTI No1 Claim Group Induced Polarization Survey		
Line 112 N	Dec 1959	Plate: F
Scale: 1" = 500'	<i>R. H. Stevens</i>	

KEN 22  
→

←  
KEN 21

PFE  
P  
x

110 W

105

100

95

90

85

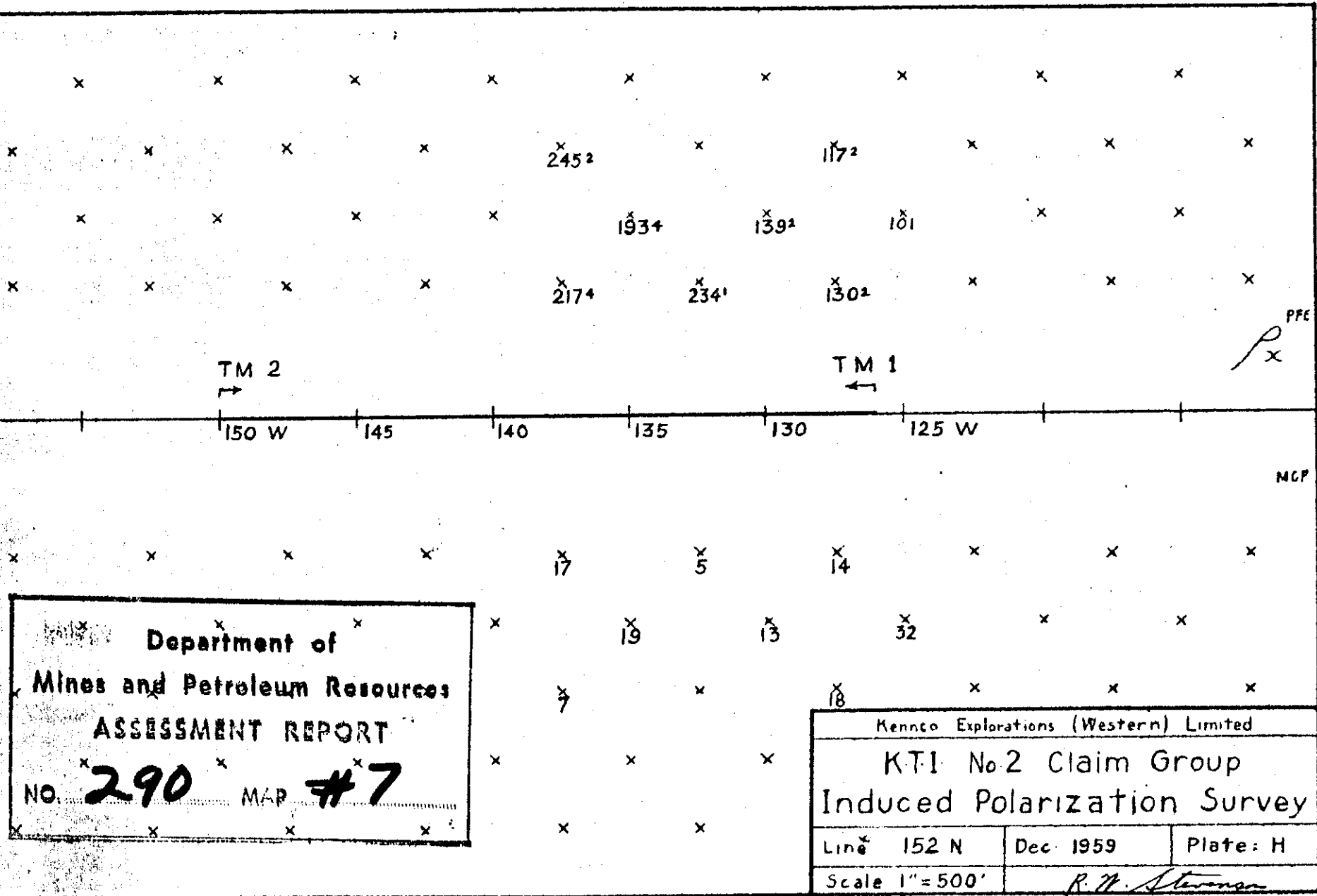
80 W

MCP

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NO. 290 MAP #6

Keneco Explorations (Western) Limited  
KTI No 1 Claim Group  
Induced Polarization Survey  
Line 120 N Dec 1959 Plate: G  
Scale: 1" = 500'  
R. H. Stevenson

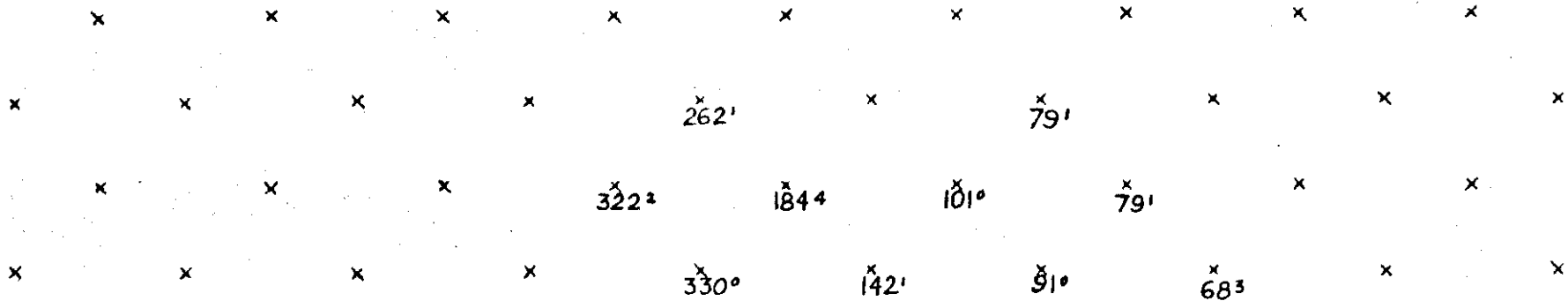


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 No. **290** MAP # **7**

Keneco Explorations (Western) Limited		
K.T.I. No. 2 Claim Group Induced Polarization Survey		
Line 152 N	Dec. 1959	Plate: H
Scale 1" = 500'	<i>R. W. Stevenson</i>	

PFE

MCP



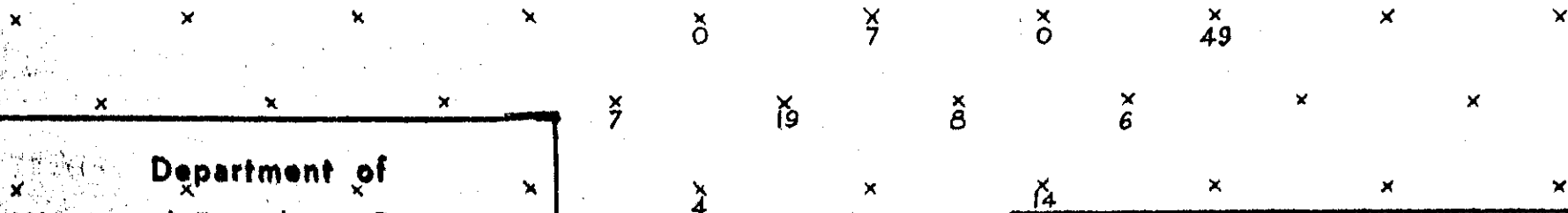
TM 2  
→

TM 1  
←

PFE  
P x

150W    145    140    135    130    125 W

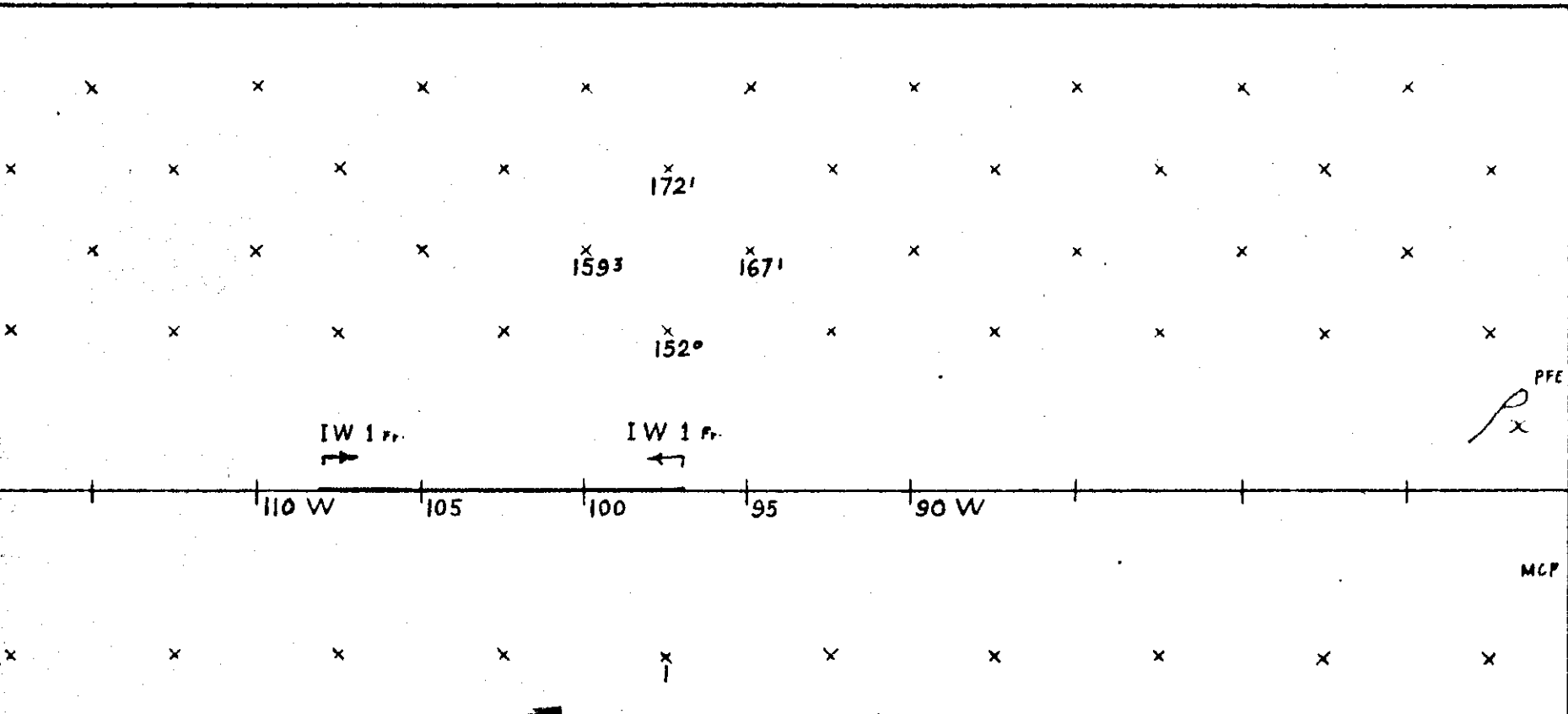
MCP



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NO. 290 MAP # 8

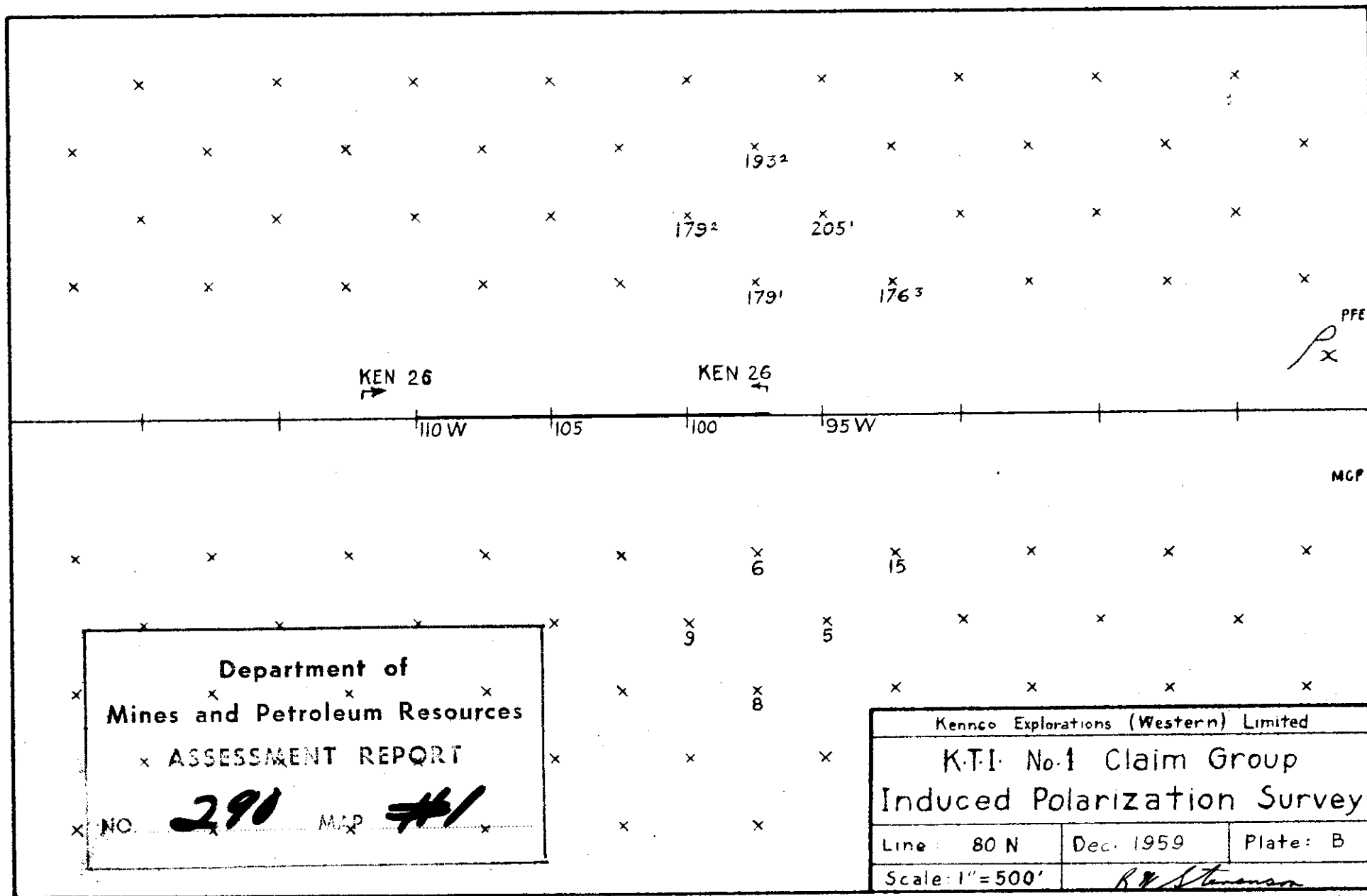
Keneco Explorations (Western) Limited		
KTI No 2 Claim Group Induced Polarization Survey		
Line 156N	Dec. 1959	Plate: I
Scale 1"=500'	<i>R. W. Atkinson</i>	





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 NO. **290** MAP **#9**

Kennco Explorations (Western) Limited		
IW No 1 Fr Mineral Claim Induced Polarization Survey		
Line 164 N	Dec. 1959	Plate: J
Scale: 1" = 500'		<i>R. W. Stevens</i>



KEN 26  
→

KEN 26  
→

110 W

105

100

95 W

MGP

PFE

*PFE*

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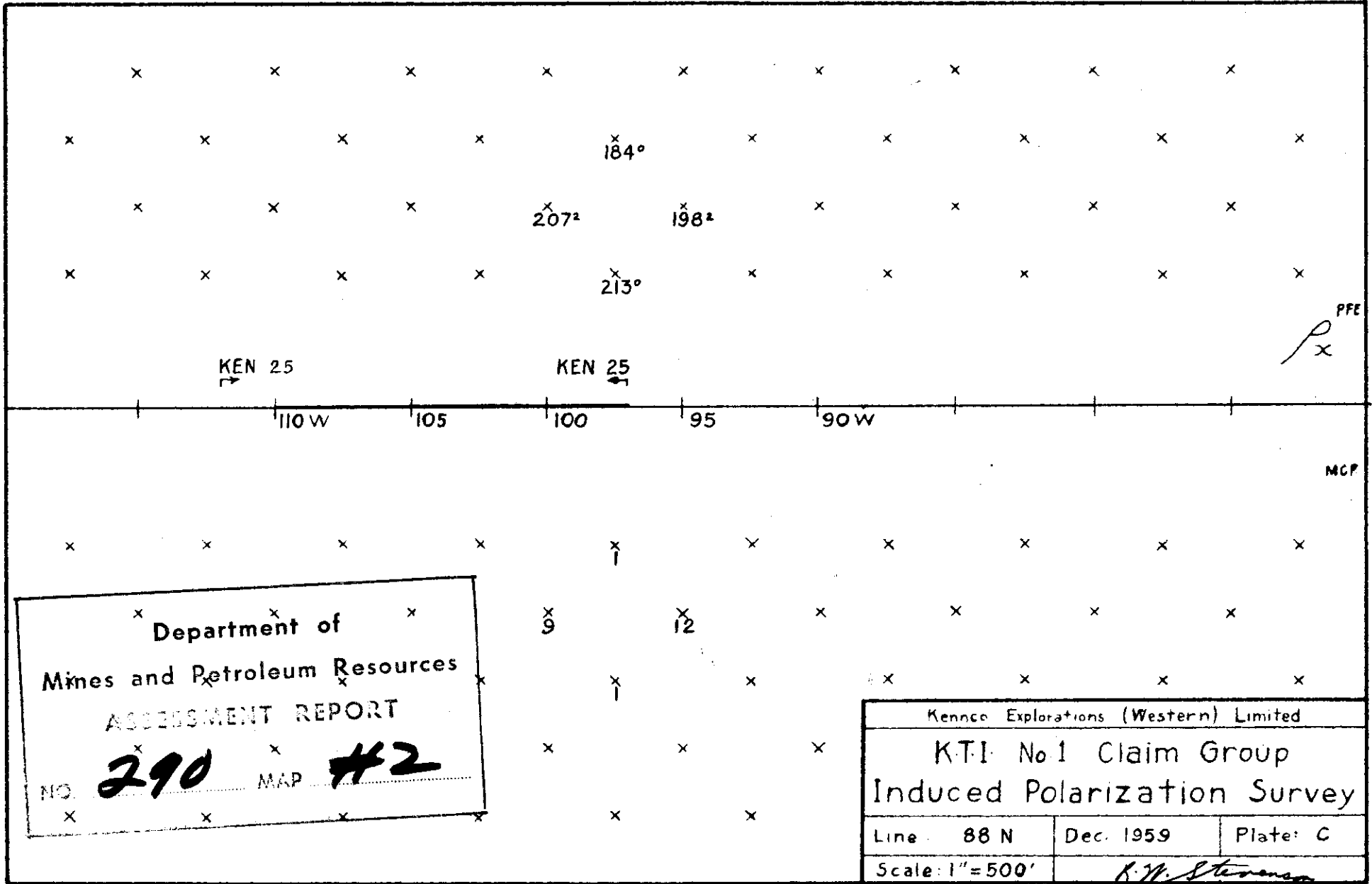
NO. **290** MAP **#1**

Keneco Explorations (Western) Limited

K.T.I. No. 1 Claim Group  
Induced Polarization Survey

Line: 80 N      Dec. 1959      Plate: B

Scale: 1" = 500'      *R. J. Stevenson*



KEN 25  
→

KEN 25  
←

110W

105

100

95

90W

184°

2072

1982

213°

PFE

MCP

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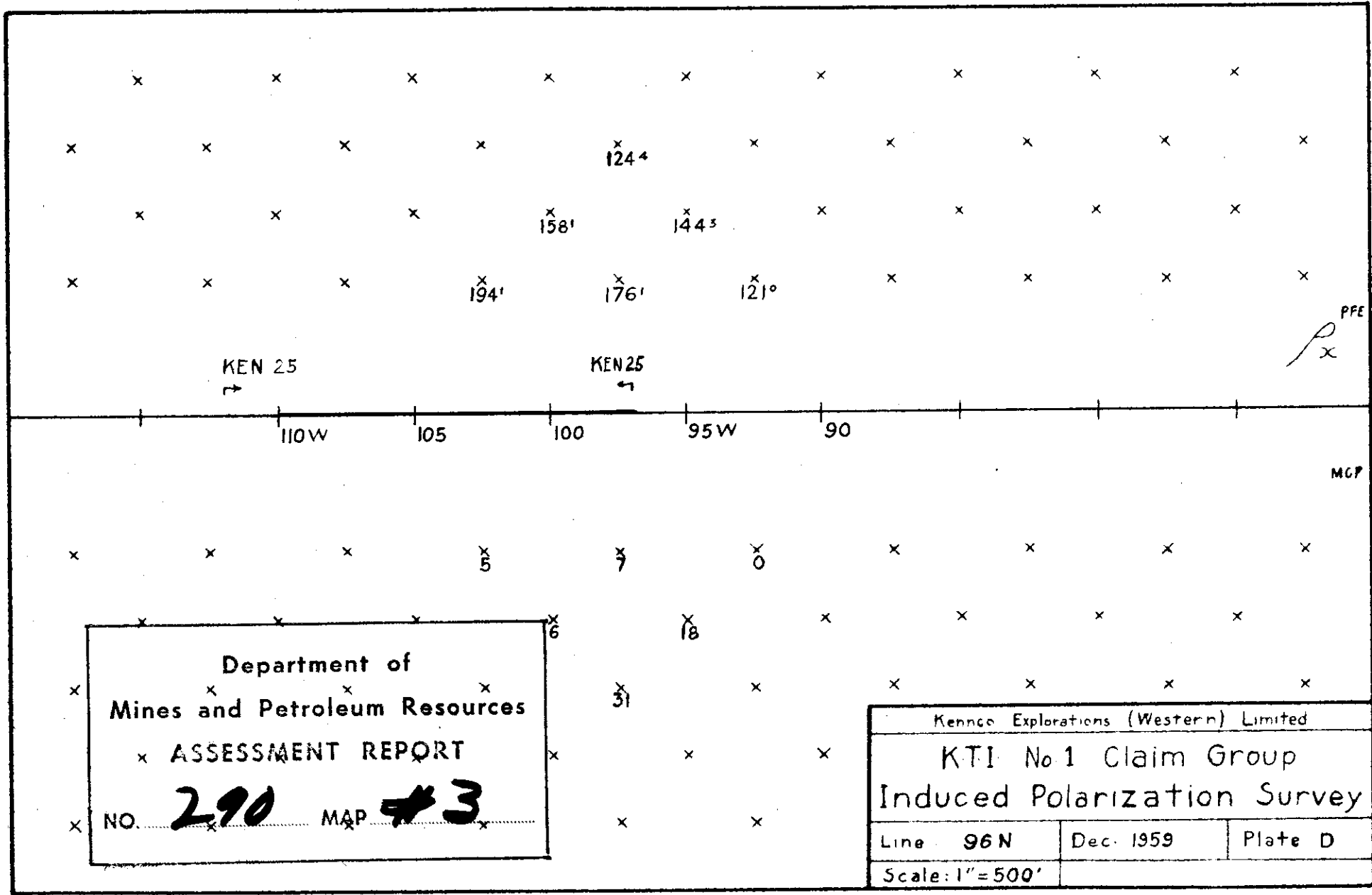
NO. 290 MAP #2

Keneco Explorations (Western) Limited

KTI No. 1 Claim Group  
Induced Polarization Survey

Line 88 N Dec. 1959 Plate C

Scale: 1"=500' *R. H. Stevenson*



KEN 25  
→

KEN 25  
←

PFE  
x

110W      105      100      95W      90

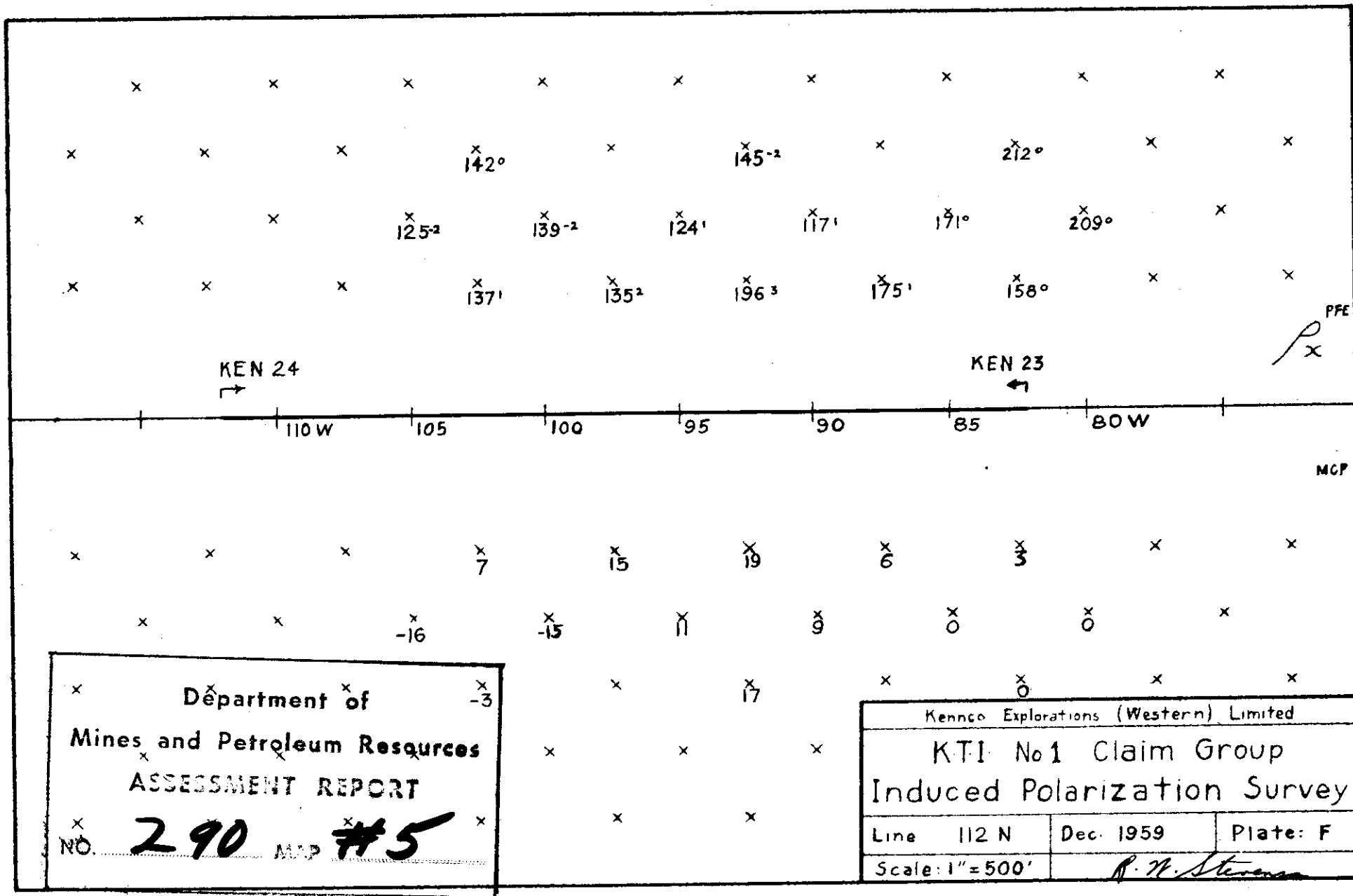
MGP

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NO. **290** MAP **#3**

Keneco Explorations (Western) Limited		
KTI No 1 Claim Group Induced Polarization Survey		
Line 96N	Dec. 1959	Plate D
Scale: 1"=500'		





KEN 24  
→

KEN 23  
←

110 W 105 100 95 90 85 80 W

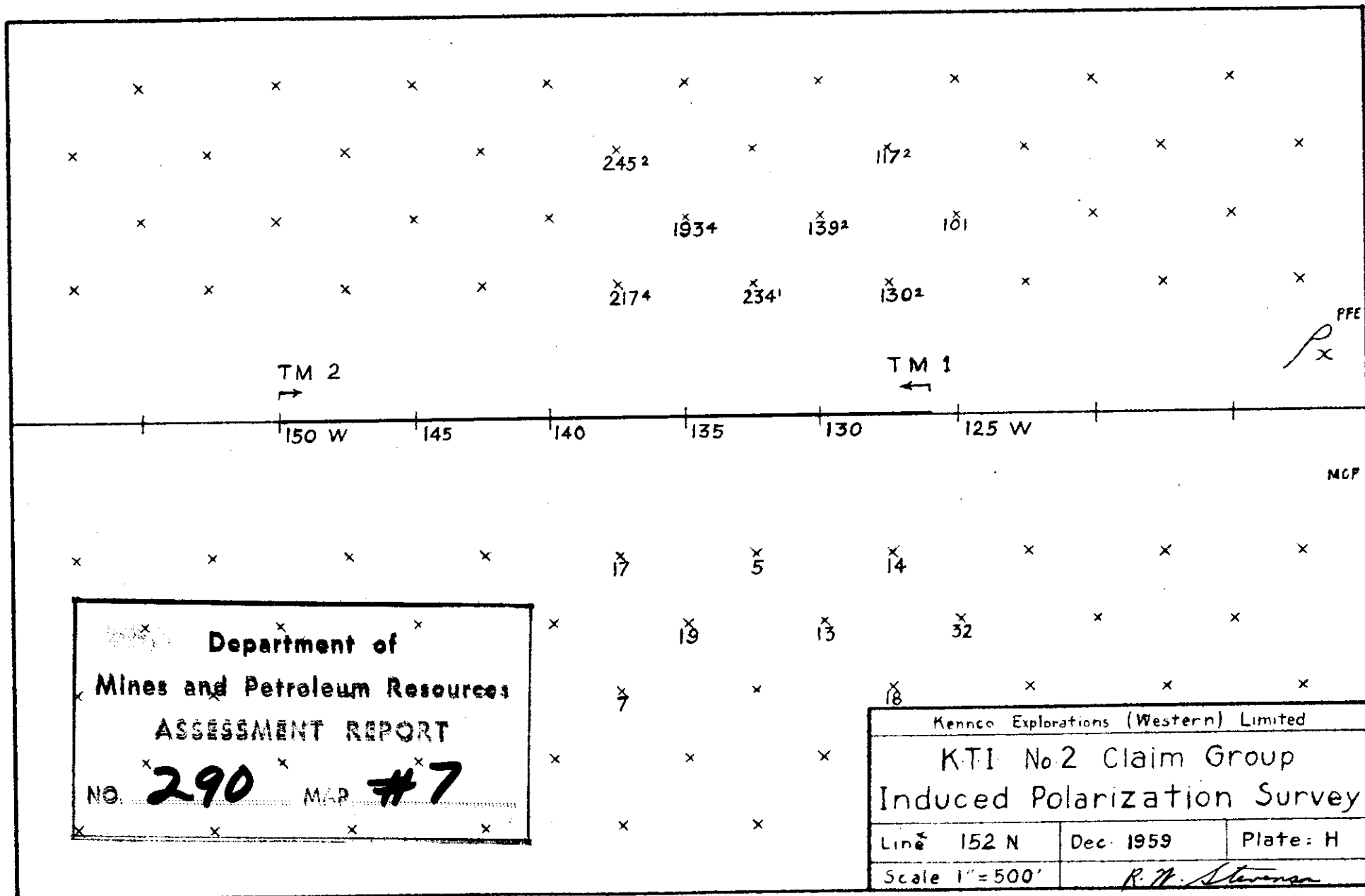
MCP

PFE  
x

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 NO. 290 MAP #5

Kennco Explorations (Western) Limited  
 KTI No 1 Claim Group  
 Induced Polarization Survey  
 Line 112 N Dec. 1959 Plate: F  
 Scale: 1" = 500' *R. N. Stevenson*

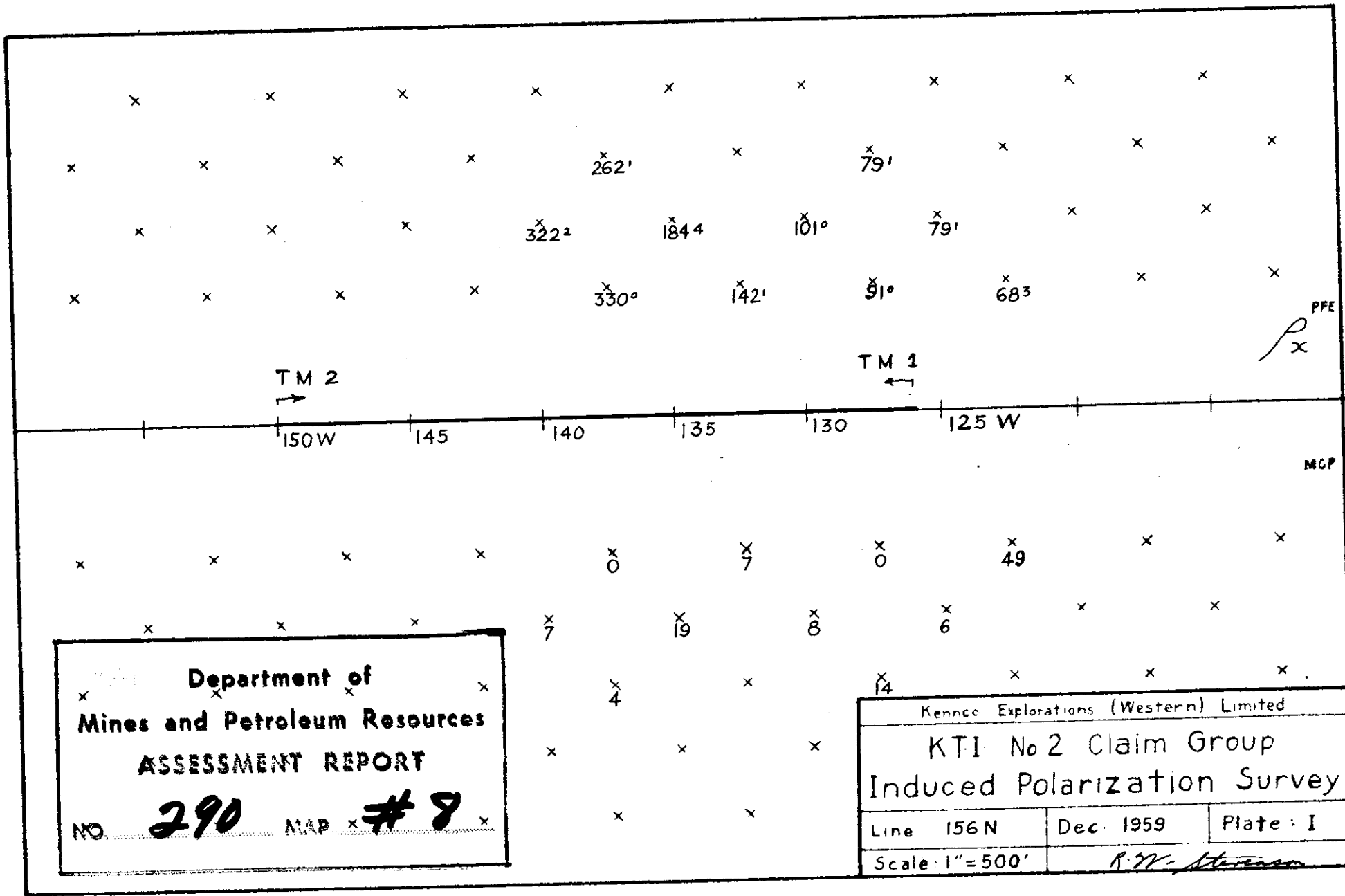




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 No. **290** MAP # **7**

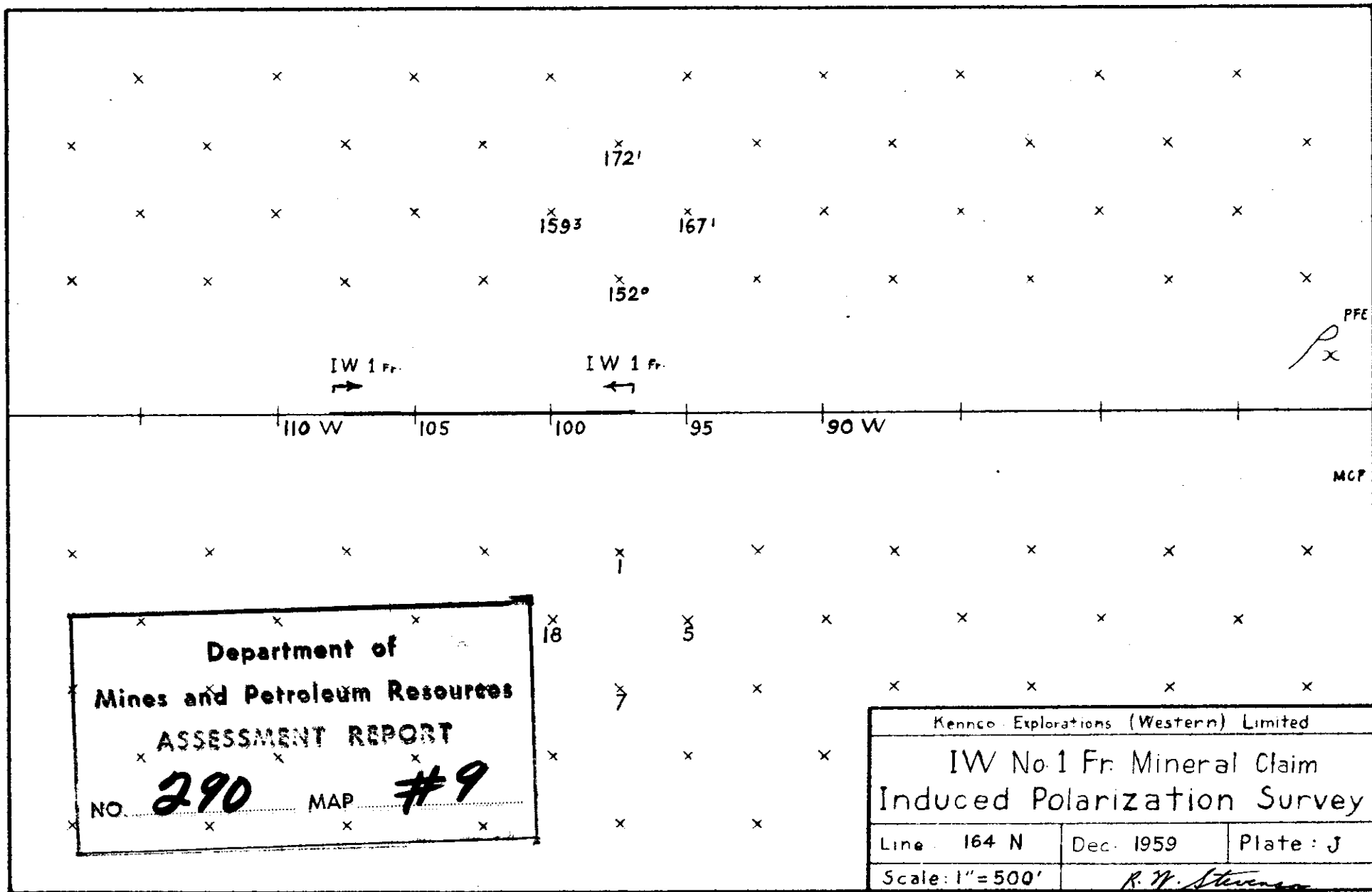
Kennco Explorations (Western) Limited		
KTI No 2 Claim Group		
Induced Polarization Survey		
Line 152 N	Dec. 1959	Plate: H
Scale 1" = 500'	<i>R. W. Stevenson</i>	





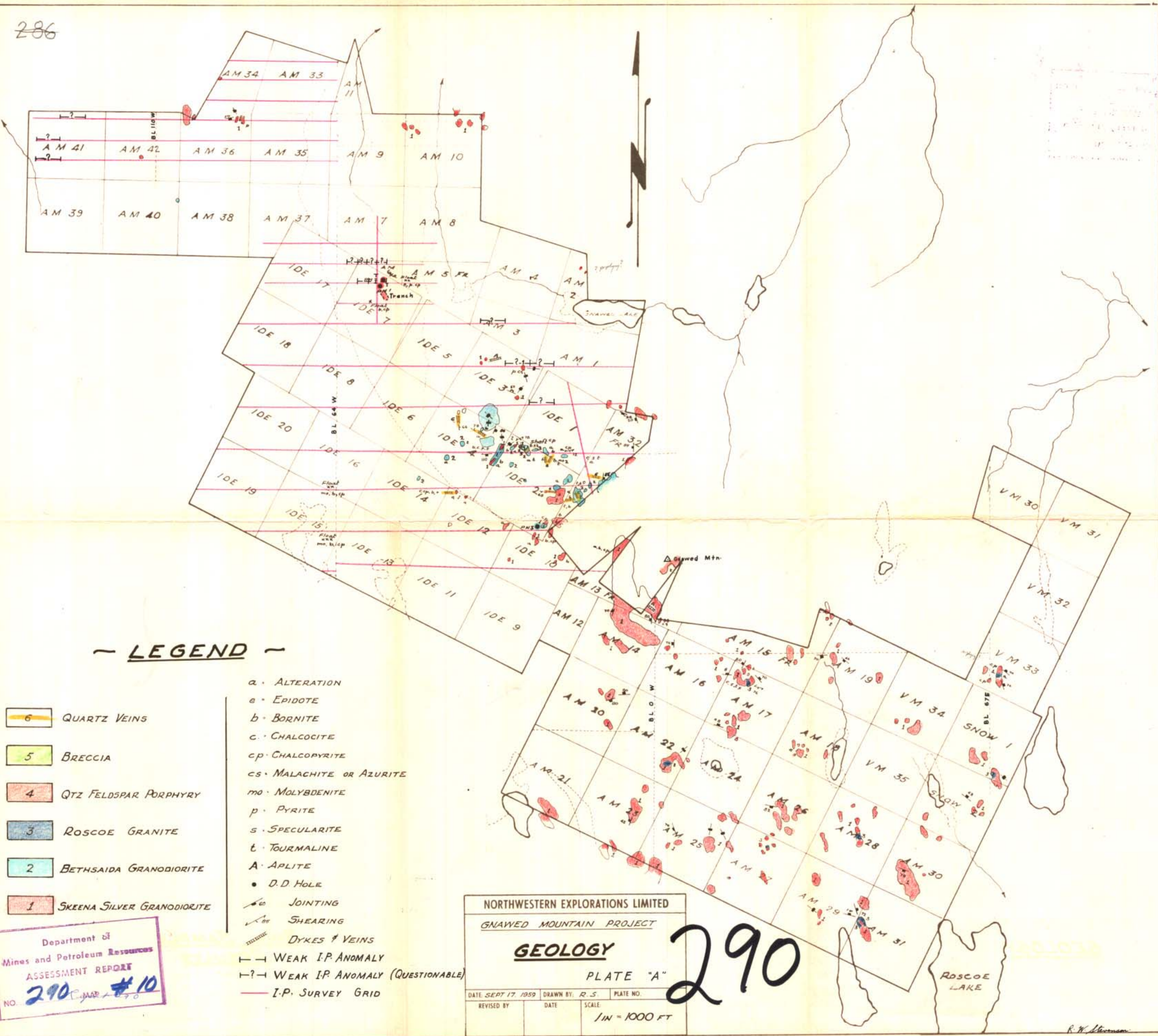
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 NO. **290** MAP # **8**

Kennecott Explorations (Western) Limited		
KTI No 2 Claim Group Induced Polarization Survey		
Line 156N	Dec. 1959	Plate: I
Scale: 1"=500'	<i>R. W. Stevenson</i>	



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Keneco Explorations (Western) Limited		
IW No 1 Fr Mineral Claim Induced Polarization Survey		
Line 164 N	Dec. 1959	Plate: J
Scale: 1" = 500'	<i>R. W. Stevenson</i>	



**LEGEND**

- 6 QUARTZ VEINS
- 5 BRECCIA
- 4 QTZ FELDSPAR PORPHYRY
- 3 ROSCOE GRANITE
- 2 BETHSAIDA GRANODIORITE
- 1 SKEENA SILVER GRANODIORITE

- a. ALTERATION
- e. EPIDOTE
- b. BORNITE
- c. CHALCOCITE
- cp. CHALCOPYRITE
- cs. MALACHITE OR AZURITE
- mo. MOLYBDENITE
- p. PYRITE
- s. SPECULARITE
- t. TOURMALINE
- A. APLITE
- D.D. HOLE
- ↖ JOINTING
- ↗ SHEARING
- ||||| DYKES & VEINS
- |— WEAK I.P. ANOMALY
- ?— WEAK I.P. ANOMALY (QUESTIONABLE)
- I.P. SURVEY GRID

NORTHWESTERN EXPLORATIONS LIMITED  
 GNAWED MOUNTAIN PROJECT  
**GEOLOGY**  
 PLATE "A"  
 DATE: SEPT 17, 1959 DRAWN BY: R.S. PLATE NO.  
 REVISED BY: DATE: SCALE:  
 1 IN = 1000 FT

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 NO. 290 #10

COLLAR

NORTH

127 + 28N

EAST

55 + 59 W

ELEVATION

AZIMUTH

DIPS

90°

~~MINING AND PETROLEUM RESOURCES~~  
 MINCO EXPLORATIONS, (WESTERN) LIMITED  
 DIAMOND DRILL RECORD

PROPERTY Gnawed Mountain - Minex option

Claim IDE No. 7

HOLE No. PN1

STARTED July 11, 1959

FINISHED July 12, 1959

PURPOSE

A-1M-MP-856

FROM	TO	DESCRIPTION	SAMPLES				ASSAYS		AVERAGES				
			SAMPLE NO.	FROM	TO	WIDTH	Core recovered	% Rec.					
0°	4°	Overburden and weathered rock.					24.1° +		83%				
4°	33°	Skeena Silver granodiorite. Slightly altered, feldspars cloudy; often greenish. Mafics chloritized. Some areas show slight rusty alteration. Mineralization chalcocopyrite and specularite. Chalcocopyrite occurs both disseminated and along fractures. Some small veinlets of secondary K-feldspar noted.											
		4.0°-7.2° - moderately weathered. Mafics well bleached or broken down to rusty Fe oxides. Chalcocopyrite common on minor fractures and disseminated.											
		7.2°-9.7° - Mafics chloritized, slightly bleached. Mineralization mainly pyrite with minor chalcocopyrite.											
		9.7°-12.3° - Fairly fresh Skeena Silver. Unmineralized.											
		12.3° - 19.6° - Moderately altered Skeena Silver with chalcocopyrite disseminated and on fractures. Mafics chloritized, feldspars cloudy. Moderately bleached appearance.											

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 NO. **290** MAP #11



COLLAR  
 NORTH 128 + 78H  
 EAST 55 + 88W  
 ELEVATION  
 AZIMUTH  
 DIPS 90°

HOLE No.  
 STARTED July 13, 1959  
 FINISHED July 14, 1959  
 PURPOSE

DIAMOND DRILL RECORD

PROPERTY Gnarved Mountain - Minez option  
 Claim IDE No. 7

A-1M-MP-856

FROM	TO	DESCRIPTION	SAMPLES				ASSAYS		AVERAGES					
			SAMPLE NO.	FROM	TO	WIDTH	Core recovered	& Rec.						
0°	9°	Overburden and weathered rock.					23°0	-		74%				
9°	40°	Skeena Silver granodiorite. Mafics chloritized & slightly bleached. Feldspars cloudy and often greenish. Some fracturing at steep (60°) angles. Chalcopyrite noted, dissem. and along fractures. Some dissem. specularite also noted.												
		9°-13.3° - Fairly fresh Skeena Silver granodiorite. Mafics slightly chloritized, feldspars slightly greenish. No mineralization.												
		13.3°-24.9° - Bleached Skeena Silver, remaining mafics chloritized. Disseminated chalcopyrite common. Many fine fractures dipping 45° at from 23.0° to 23.8°. Chalcopyrite on fract. here. 24.8° a 1/4" band of chalcopyrite along a fract. dips 55°. Occasional minor specularite.												
		24.9°-25.8° - Skeena Silver with dissem. chalcopyrite. Mafics chloritized; feldspars high in orthoclase - may be secondary.												

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 NO. 290  
 MAP #12









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NORTHWESTERN EXPLORATIONS LIMITED			Department of Mines and Petroleum Resources		
<b>SOIL SAMPLE RESULTS</b>			ASSESSMENT REPORT		
TOTAL COPPER (p.p.m.)			NO. 290 MAP #14		
PLATE "B"					
DATE: SEPT 17-1959	DRAWN BY: R.S.	PLATE NO.			
REVISED BY:	DATE:	SCALE:	1 IN = 1000 FT		
			Report 290		

Roscoe Lake  
R. W. Stevenson