

325

KENNCO EXPLORATIONS, (WESTERN) LIMITED

D R G MINING CLAIMS No.'s 1 to 76

D R G No. 1 Claim Group

D R G No. 2 Claim Group

D R G No. 3 Claim Group

D R G No. 4 Claim Group

REPORT

ON

GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL SURVEYS

South slope of Greenstone Mountain

Kamloops Mining Division

British Columbia

50° 120° NW

by

R. W. Stevenson

June 26 to September 18, 1960



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<p>Department of Mines and Petroleum Resources ASSESSMENT REPORT</p> <p>NO. <u>325</u> MAP</p>
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Claim Group	Claim	Tag no.	Geolog.	Distribution of Work			Years work			
				Geochem.	Geophys.	Drilling	Trenching	claimed	Total	
DRG 1	DRG	3	346043	90.00	111.15	31.00		690.00	2	
		4	346044		54.75				2	
		6	346046	80.00	88.92				2	
		8	346048	80.00	125.97	104.00			2	
		10	346050	80.00	46.93	150.00			2	
		11	346051		0	86.00			1	
		12	346052		0	74.00			1	
		13	346053		22.23				1	
		14	346054		49.40	32.00			1	
		25	346065		0				1	
		26	346066		0				1	
		27	346067		0				1	
		28	346068		0				1	
		29	346069		9.88	128.00			1	
		30	346070		0				1	
		31	346071		7.41	142.00			1	
		32	346072		0				1	
		33	346073		0	74.00			1	
		34	346074		0				1	
		58	373858		4.94	150.00			1	
TOTAL				\$330.00	\$521.58	\$971.00	\$690.00	25	2512.58	
DRG 2	DRG	5	346045	80.00	130.91	20.00		99.93	2	
		7	346047	80.00	118.56	185.00			2	
		9	346049	80.00	41.99	50.00			2	
		15	346055	80.00	76.57	25.00			2	
		16	346056	80.00	101.27	135.00			2	
		17	346057	80.00	93.86				2	
		18	346058	80.00	98.80	135.00			2	
		19	346059	80.00	54.34	40.00			2	
		21	346061	80.00	41.99	100.00	47.60	210.00	2	
		53	373853	80.00	113.62	124.00			2	
		54	373854	80.00	88.92	10.00			2	
		56	373856		41.99				2	
		73	373873		12.35	30.00			2	
		74	373874		44.46				2	
		55	373855		24.70	54.00			1	
		57	373857		0				1	
75	373875		0				1			
76	373876		7.41				1			
TOTAL				\$880.00	\$1091.74	\$908.00	\$ 47.60	\$309.93	32	3237.27

Claim Group	Claim	Tag. no.	Geolog.	Distribution of Work			Years work			
				Geochem.	Geophys.	Drilling	Trenching	claimed	Total	
DRG 3	DRG 20	346060	80.00	106.21	140.00			2		
	22	346062	80.00	133.38	53.00			2		
	35	346075	80.00	64.22	368.00	53.55		2		
	36	346076	80.00	111.15	23.00	243.95		2		
	37	346077	80.00	93.86	112.00			2		
	38	346078	80.00	91.39	184.00			2		
	39	346079	80.00	88.92		154.70		2		
	40	346080	80.00	93.86	170.00			2		
	47	373847		111.15	160.00			2		
	48	373848		22.23	46.00			2		
	63	373863		0	48.00			2		
	64	373864		0	183.00			2		
	65	373865		0				2		
	66	373866		0	48.00			2		
	67	373867		0				2		
	68	373868		2.47				2		
	69	373869		0				2		
	70	373870		44.46	169.00			2		
	71	373871		0	133.00			2		
	72	373872		98.80	38.00			2		
	TOTAL			\$640.00	\$1062.10	\$1875.00	\$452.20		40	4029.30
	DRG 4	DRG 1	346041	80.00	91.39	171.00			2	
23		346063	40.00	44.46				2		
24		346064	40.00	121.03	171.00			2		
2		346042		83.98				1		
41		373841		56.81				1		
42		373842		118.56	171.00			1		
43		373843		41.99	120.00			1		
44		373844		93.86	152.00			1		
45		373845		0	185.00			1		
46		373846		61.75	108.00			1		
49		373849		83.98	30.50			1		
50		373850		0				1		
51		373851		27.17				1		
52		373852		0				1		
59		373859		0				1		
60		373860		0				1		
61		373861		0	27.25			1		
62	373862		0				1			
TOTAL			\$160.00	\$824.98	\$1135.75			21	2120.73	

## INTRODUCTION

The property discussed in this report is on the south side of Greenstone Mountain, about 15 miles southwest of Kamloops, B.C. The exploration work done on the property during the period June 26 to September 18, 1960 included geological, geochemical, and induced polarization, self-potential, and magnetometer surveys, as well as diamond drilling and bulldozer trenching.

The geological mapping was done by R.W. Stevenson, assisted by G. Bara, G. Fabian, and R. MacKay. Consultation on the geological survey was given by Dr. J.A. Gower. The geochemical sampling was done by G. Bara, G. Fabian, and R. MacKay, under the supervision of R.W. Stevenson. Linecutting was done by G. Bara, G. Fabian and R. MacKay. The geophysical surveys were done by R. Roadhouse, H. McGladdery, D. Peaker, R. Stubbs, H. Chambers, L. Giovannetti, F. Bara, and H. Ebell, under the supervision of R. R. Brooks.

## LOCATION AND ACCESS

The property is located at latitude 50°35'N, longitude 120°39'W. It is on the south side of Greenstone Mountain, about 15 miles southwest of Kamloops, B.C. Elevation ranges from 5000' to 5500' a.s.l. The topography is gently undulating over most of the claim group, with the exception of the northeast quarter which is near the peak of Greenstone Mountain. Most of the property is covered with open pine forest.

A good gravel road extends from the Trans Canada Highway at Cherry Creek, to near the northeast corner of the property. An earth road continues across the claims to Dominic Lake.

## FIELD PROCEDURES

Control Survey Lines: Three north-south base lines, and five east-west lines were cut and chained to provide control for subsequent work. All geophysical work was done on survey lines. Geochemical sampling and geology were done on pace and compass traverses between the survey lines. A base map with scale of 1" = 400' was compiled from the survey notes. Claim location posts were tied in to the nearest survey lines.

Geological Survey: Twenty-six claims were mapped geologically, as shown on Plate No. 3. These were D R G Claim No.'s 1,3,5,6,7,8,9, 10,15,16,17,18,19,20,21,22,23,24,35,36,37,38,39,40,53, and 54. Between survey lines, pace and compass traverses were made at 400' intervals, with an assistant on each side of the man running the line. Careful

attention was paid to; type and grade of mineralization, alteration, and structure, as well as rock type. A study of six rock thin sections was also made.

Other work yielded information relevant to the geological survey. Four xrt diamond drill holes were completed with a total footage of 84'. Drill hole PR-1 (26') was on claim D R G No. 39; DDH PR-2 (41') was on claim D R G No. 36; DDH PR-3 (9') was on claim D R G No. 35; and DDH PR-4 (8') was on claim D R G No. 21. The drill hole locations are marked on the geological map. A total of 1815' of trenches were dug to bedrock by bulldozer. They are over 10' in width, and 2' to 8' deep. A total of 1260' was trenched on claim D R G No. 3, 175' trenched on claim D R G No. 5, and 380' trenched on claim D R G No. 21. Their locations are marked on the geological map.

Geochemical Survey: The geochemical work consisted of an extensive soil sample survey. Samples were taken at 100' intervals on lines 400' apart; except for a small area near the east boundary where the sample interval was 200'. Samples were taken from the "B" horizon wherever possible and analyzed for total copper and total molybdenum by perchloric acid extraction at the Kennco Explorations, (Western) Limited geochemical laboratory in North Vancouver. The results were plotted on maps which are the same scale as the geological map (1" = 400').

Geophysical Surveys: An induced polarization survey was done on all survey lines on the property. Self-potential and magnetometer surveys were done in areas where they would add information which might help in the interpretation. The methods are described more fully under the section "Geophysical Survey".

## INTERPRETATION

Geological Survey: Outcrop is moderately plentiful over much of the area which was mapped geologically. The most common rock type is andesite. It underlies the central part of the property. Although minor differences in composition were noted, no flow banding or primary structures could be found to give an indication of strike or dip. Magnetite is always present as a minor accessory mineral. The andesite is cut by several dyke-like bodies of similar composition. These may have been penecontemporaneous feeder dykes for the andesite flows.

A medium grained diorite occurs on the northwest corner of the survey area. Magnetite occurs in it, not only as an accessory mineral, but also in thin stringers. It appears to be younger than the andesite.

Granophyre intrudes the andesite on the southwest quarter of the survey area. It contains fairly large euhedral quartz phenocrysts in a fine to medium grained groundmass in which there is some granophyric texture. Magnetite occurs as an accessory mineral.

A small plug of feldspar porphyry occurs on claim D R G No. 36. A dyke of similar rock occurs on claim D R G No. 54. They both intrude the andesite. This rock is characterized by subhedral feldspar phenocrysts in a rhyolitic groundmass. Some phases contain very tiny hornblende needles. Small amounts of accessory magnetite are present as very minute grains. This rock may be related to the granophyre described above.

A complex of felsite dykes occurs along the contact between the granophyre and andesite on claims D R G No. 5, 3, and 21. It is a fissure filling type of intrusive, and slight changes in composition suggest several intrusive surges from a common source. It also contains minor accessory magnetite.

Pyrite has a widespread occurrence in the andesite and related intermediate dykes on most of the survey area. It is usually a fracture coating, but there is also some disseminated through the rock. To a lesser extent, similar mineralization occurs in the diorite. Pyrite also occurs in the granophyre adjacent to the contact, but only as disseminated grains and cubes. Pyrite is scarce in the feldspar porphyry, and almost entirely absent from the felsite dykes. A few grains of molybdenite occur in the granophyre.

Alteration is widespread, but not intense. It is most evident in the andesite and consists chiefly of epidote, carbonate, and sericite alteration.

Geochemical Survey: The soil samples were analyzed for total copper and for total molybdenum. The results are discussed separately, because they appear to reflect different types of mineralization.

The total molybdenum in soil results are plotted on Plate No. 1. The more important areas of anomalous results coincide roughly with the acid intrusives. The granophyre has the highest results, and the feldspar porphyry has intermediate results. Soil cover conditions are similar over each intrusive, indicating a higher concentration of accessory molybdenum in the granophyre. Several elongate anomaly zones (on claims No. 38,22,40,20,54,7) are caused by concentration of molybdenum in humus layers along drainage courses.

The total copper in soil results are plotted on Plate No. 2. There is an unusually high background over all except the southwest corner of the survey area. This high background area coincides roughly with distribution of pyrite in the rocks, which was described under geology. Although no copper minerals were identified, it is thought

that the pyrite carries very minor amounts of copper. The several areas of highly anomalous copper are caused by concentration of copper in humus layers along drainage courses.

GEOPHYSICAL SURVEYS

Work Performed.

	<u>Coverage</u>	<u>Date Started</u>	<u>Date Finished</u>	<u>Total Man Days</u>
I. P.	8.2 line miles	June 26	July 16	116
Magnetics	9.3 " "	July 4	July 16	20
Self-Potential	8.4 " "	June 28	July 12	14

Induced Polarization 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. Sulphides, native metals, graphite, magnetite and other minerals with metallic lusters exhibit metallic conduction on 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 A.C. measurement is an indication of the presence of metallic conductors.

Two quantities are obtained from field measurements - the D.C. apparent resistivity ( $\rho_{d.c.}$ ) and the A.C. apparent resistivity ( $\rho_{a.c.}$ ). From these two quantities two other factors are computed and are defined as follows:

$$P.F.E. = \frac{\rho_{d.c.} - \rho_{s.c.}}{\rho_{a.c.}} \quad \text{Per Cent Frequency Effect}$$

$$M.C.F. = \frac{P.F.E. \times 10^5}{\rho_{d.c.}} \quad \text{Metallic Conduction Factor}$$



These two quantities are studied with the D.C. resistivity in arriving at an interpretation. The P.F.E.'s must be significantly greater than instrumental precision and background frequency effects of the area in order to be considered as indicative of metallic conduction. In some cases only  $\rho_{d.c.}$  and the M.C.F. are presented in the data. It must then be established that the values given for the M.C.F. are based on significant frequency effects. Anomalous values of the M.C.F. are considered to indicate metallic conduction, which may or may not consist of economic mineralization.

The field method used in this survey consisted of the end-on electrode arrangement using four current electrodes spaced 400 feet apart (Fig. 1). With this arrangement current (either D.C. or A.C.) is fed into the ground across interval "c" while the corresponding voltage measurements are recorded across interval "e". By a multiple switching arrangement at the transmitter current may be supplied across interval "a", "b" or "c" depending upon the position of the receiver. With the sender across interval "c" and the receiver across interval "e" the values of the M.C.F. are plotted at the point "c, e" below the reference line and the D.C. resistivity ( $\rho_{d.c.}$ ) is plotted at point "c, e" above the reference line. These points are determined by the intersection of 45° diagonals drawn from the mid-points of the sender and receiver intervals.

The values plotted at the various points are then contoured. Per cent frequency effects appear as superscripts to  $\rho_{d.c.}$  and are not contoured. The reference line on the I.P. profile represents the line of electrodes on the ground. Resistivity changes in the ground at increasingly greater distances away from the reference line are indicated by the behavior of contours parallel to and away from the reference line. Lateral resistivity changes along the profile line are indicated by contours along the direction of a 45° diagonal.

#### Magnetic Survey Method

An Askania torsion wire magnetometer was used to carry out magnetic measurements over lines previously surveyed by the induced polarization method. This magnetometer is of the null-type that measures the vertical component of the earth's magnetic field. The scale value of the instrument used on this survey was set by the manufacturer at 264.5 gammas per degree. The smallest reading or sensitivity obtainable is approximately 3 gammas.

In performing a magnetic survey using this instrument one or more base stations are first established throughout the survey area. From the base station the operator obtains readings at each 100 foot station on the survey line. "Tie-ins" are made at the base station several times during the day in order to establish diurnal variations and to check on any unusual magnetic activity due to magnetic storms. By arbitrarily assigning a magnetic value to the original base station

and knowing the difference in readings between the base station and each survey station, magnetic values are computed for each of these stations. The resultant data are then contoured and may be presented in either plan or profile form.

### Interpretation of Data

#### Induced Polarization and Magnetic Surveys (Plates 4, 5 & 6)

An anomalous area some 9000 feet by 9000 feet was outlined by the induced polarization method. Within this area there are a number of good response zones that appear to connect in such a manner as to form two parallel trends that converge into a fairly large continuous conductive region in the vicinity of the western half of lines 40N and 60N.

A correlation between the contoured magnetic data and the I.P. data suggests that there is a relationship between the relatively weak magnetic highs and the good coincident I.P. response zones, particularly on lines 20N and 40N. The magnetic highs are not of sufficient magnitude to indicate that the good conductive zones are due to magnetite but rather the magnetic trends reflect some geologic feature at depth and the conductive zones represent the near-surface expression of some wide-spread conductive blanket. However, the good conductive zone between stations 76N and 80N on the base line and its association with very high coincident magnetic values appear to be caused by conductive magnetite.

#### Self Potential Survey (Plate 7)

No perceptible anomalous values were obtained that could be interpreted or correlated with the more reliable induced polarization and magnetic data.

Vancouver, B. C.

November 17, 1960

R. W. Stevenson  
R. W. Stevenson

GEOPHYSICAL FIELD NOTES

loop

CONTRACT NO. Golden Wonder



LOOP LOCATION AB1-35 + 50 FT EAST.

AMP 1.0

DATE May 9, 1960

BY A.B. & M.B.

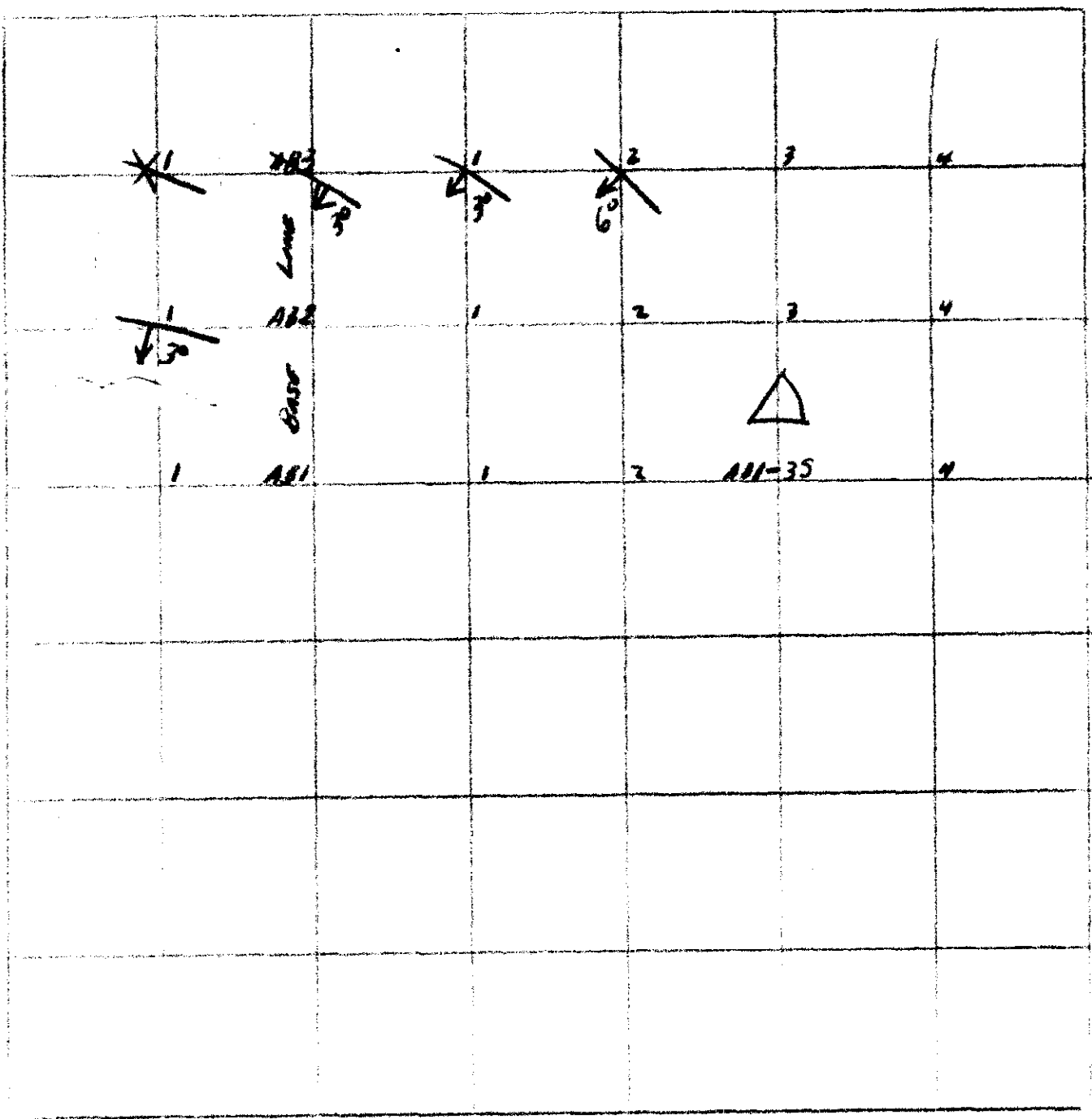
1" = 100' HOR.

125' VERT.

Δ = Loop location

\* = ZERO DIP

∠ = DIP IN DEGREES



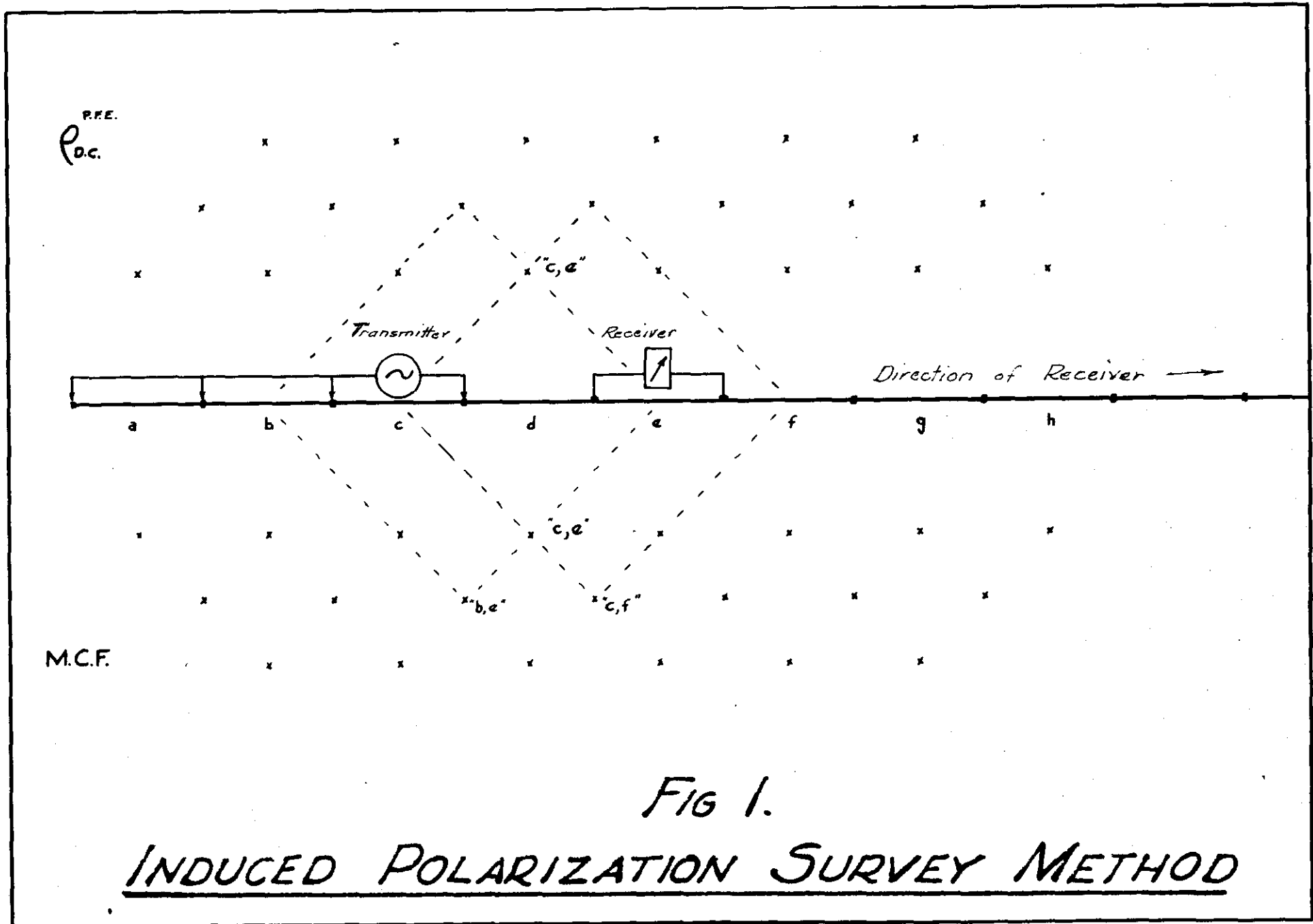
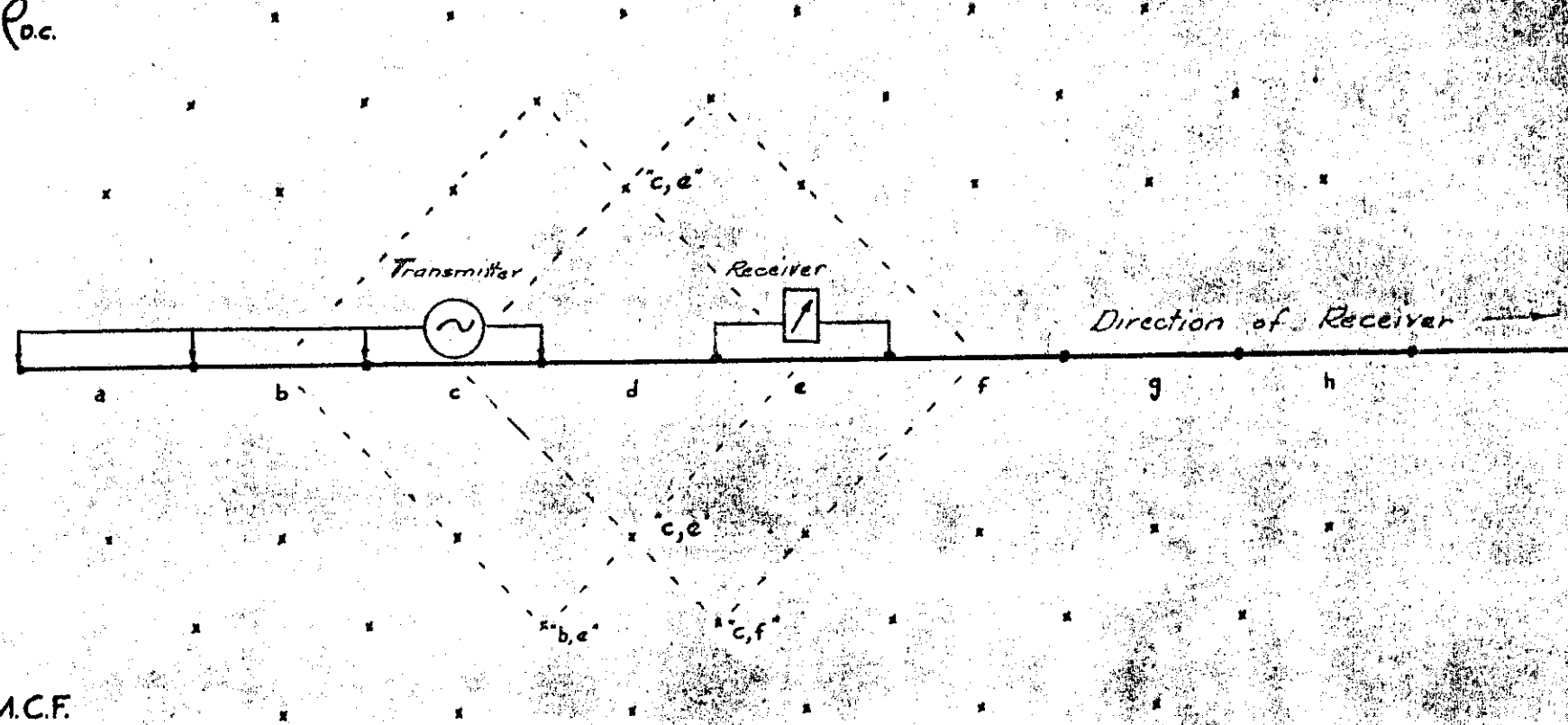


FIG 1.

INDUCED POLARIZATION SURVEY METHOD

P.P.E.  
P.O.C.



M.C.F.

FIG 1.

INDUCED POLARIZATION SURVEY METHOD

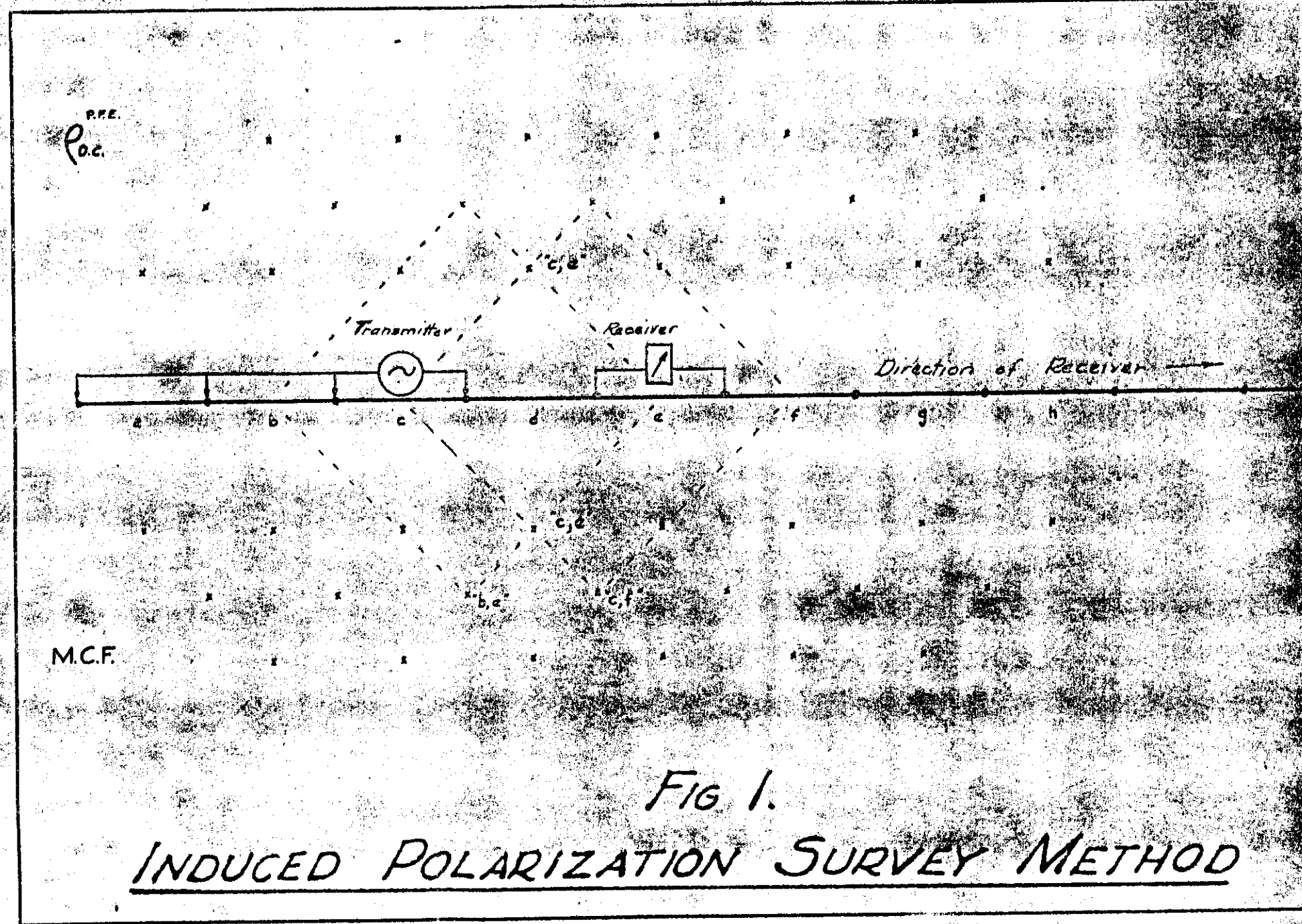


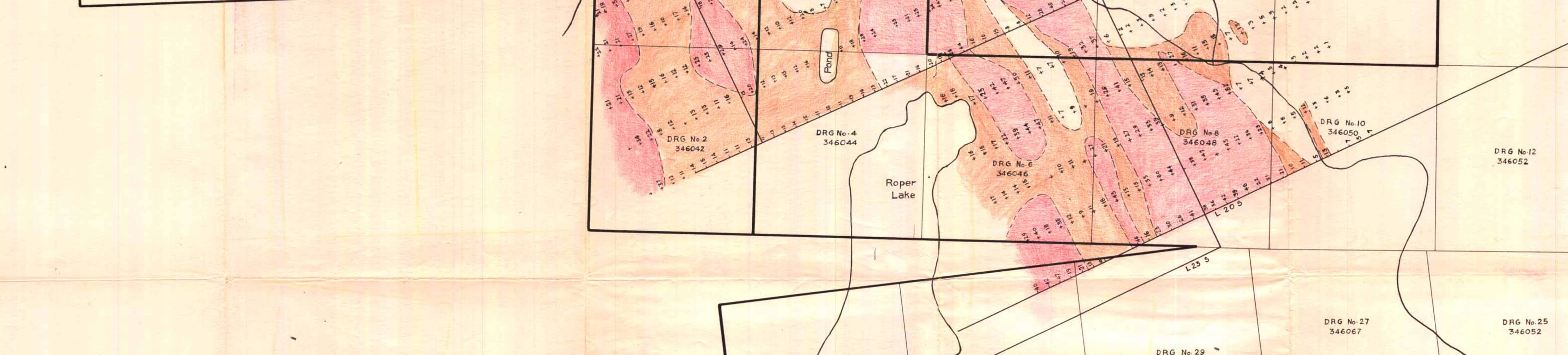
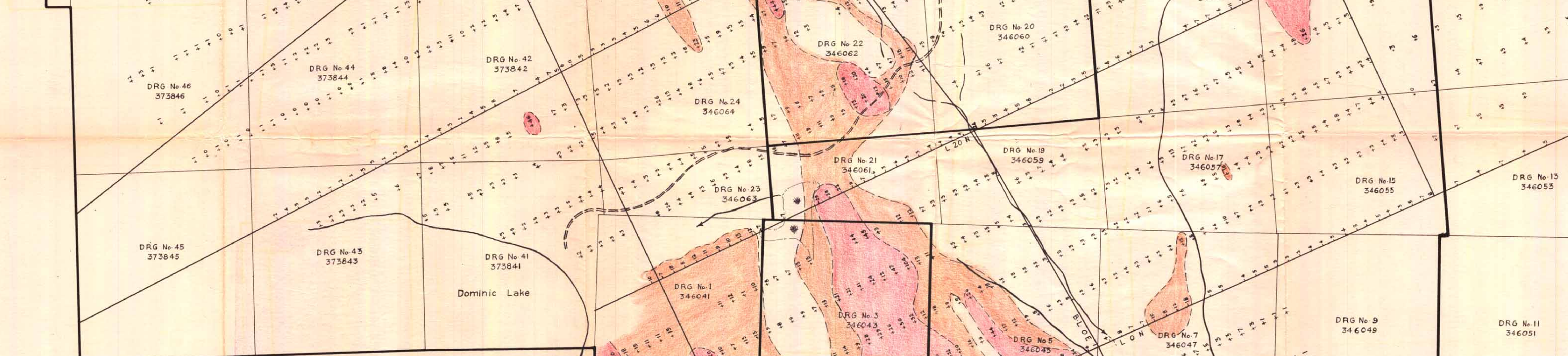
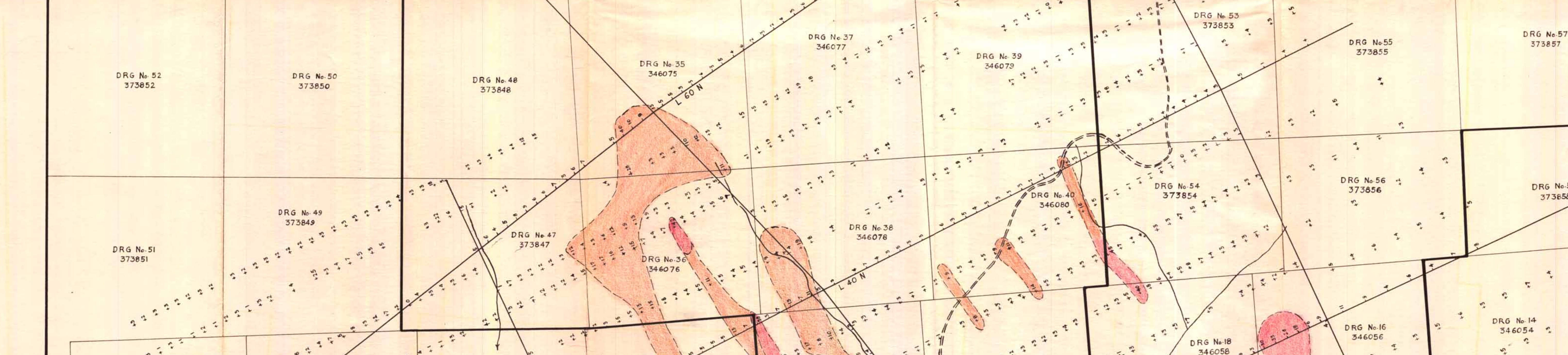
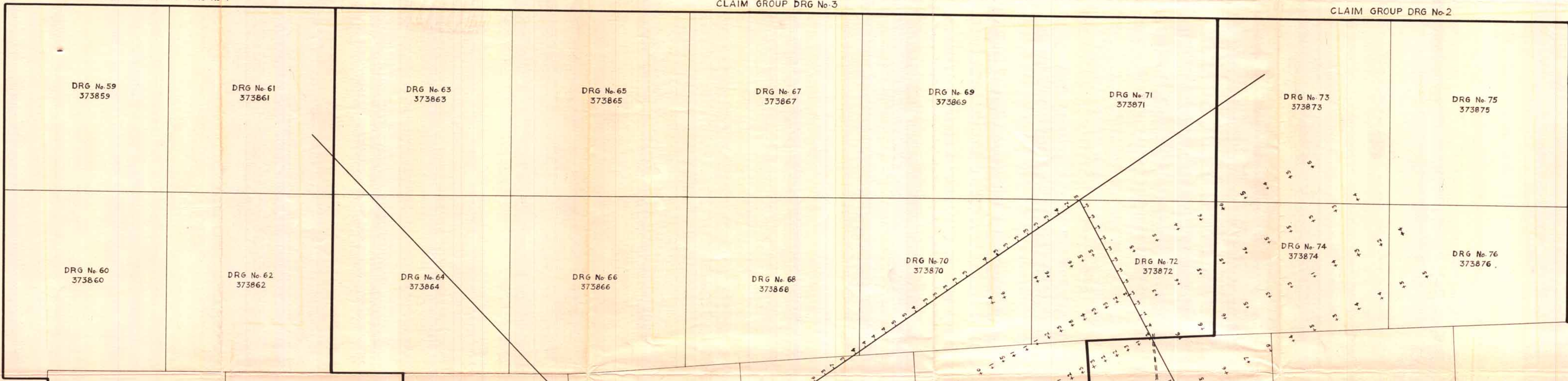
FIG 1.

INDUCED POLARIZATION SURVEY METHOD

CLAIM GROUP DRG No 4

CLAIM GROUP DRG No 3

CLAIM GROUP DRG No 2



Figures represent total molybdenum in ppm, by perchloric acid extraction

Anomalous soil area

Samples were:

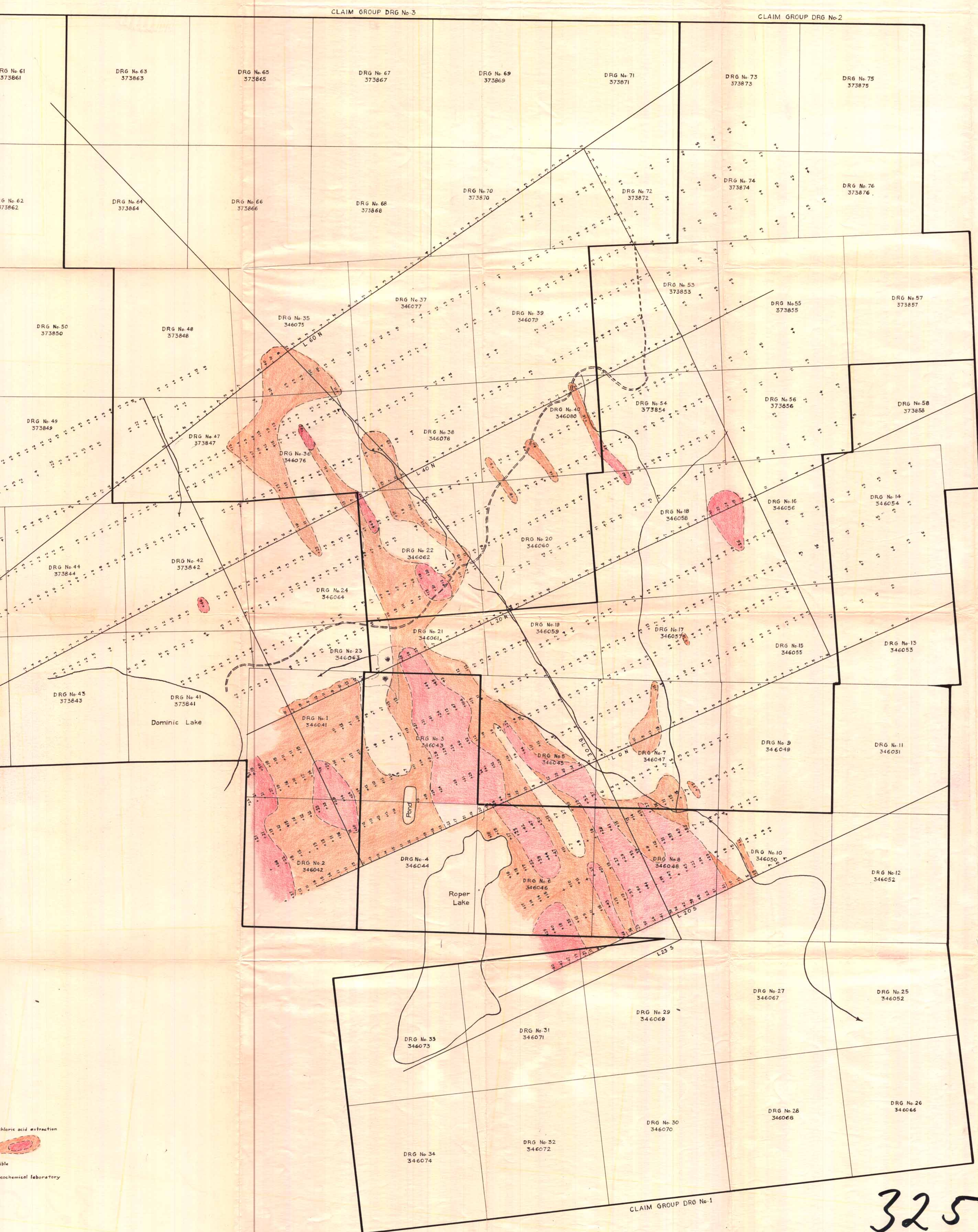
- taken from 'B' (rusty) zone where possible
- sieved to minus 80 mesh
- analysed at Kennco Explorations geochemical laboratory



CLAIM GROUP DRG No 1

325

*R.H. Stewart*



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 325 M.P. 1

Report 325  
**KENNCO EXPLORATIONS (WESTERN) LIMITED**  
DRG Claim Groups  
Roper Lake Project  
Kamloops Mining Division, B.C.  
Geochemical Survey  
Molybdenum in Soil  
DATE: November 1954 DRAWN BY: RWS PLATE NO. 1  
REVISED BY: DATE: SCALE:  
1 inch = 400 feet

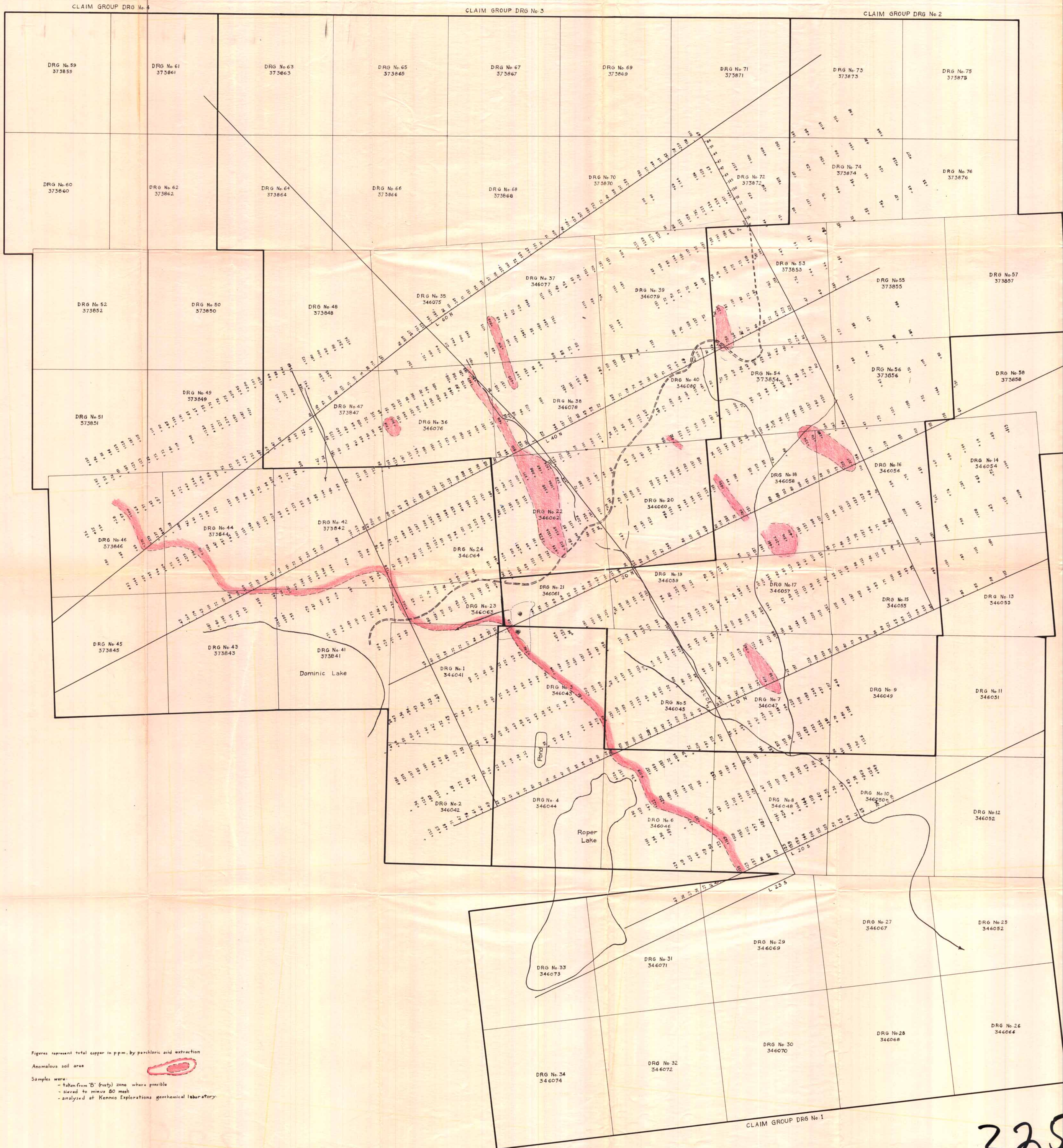
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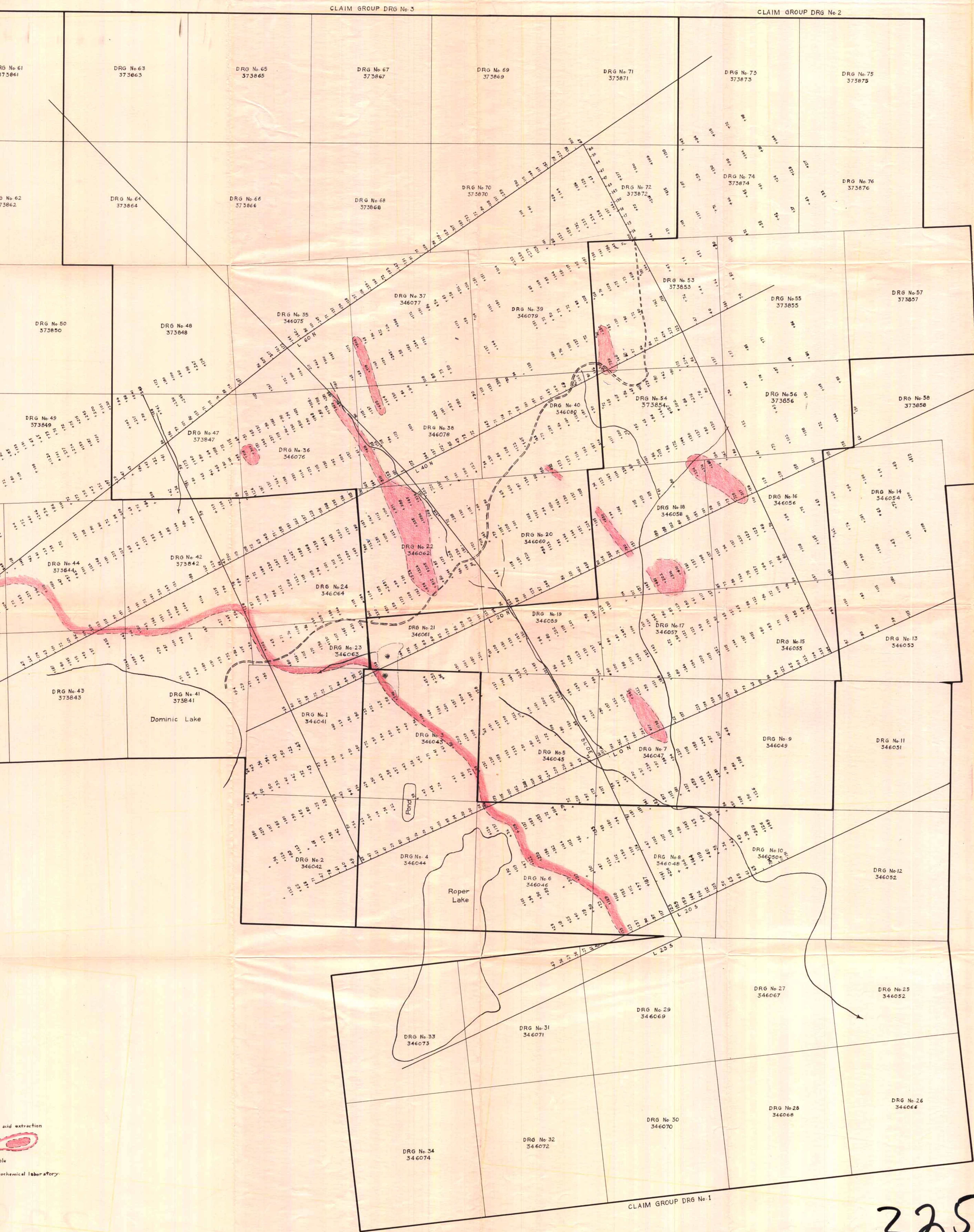
Chloric acid extraction  
Geochemical laboratory

R. H. Stinson





Figures represent total copper in ppm, by perchloric acid extraction  
 Anomalous soil area  
 Samples were:  
 - taken from 'B' (rusty) zone where possible  
 - sieved to minus 80 mesh  
 - analysed at Keneco Explorations geochemical laboratory.



acid extraction  
chemical laboratory

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 325 MAP 2

*Report 325*  
**KENCO EXPLORATIONS (WESTERN) LIMITED**  
DRG Claim Groups  
Roper Lake Project  
Kamloops Mining Division, B.C.  
Geochemical Survey  
Copper in Soil  
DATE: November 14, 1960 DRAWN BY: F.W.S. PLATE NO. 2  
REVISED BY: DATE SCALE: 1 inch = 400 Feet

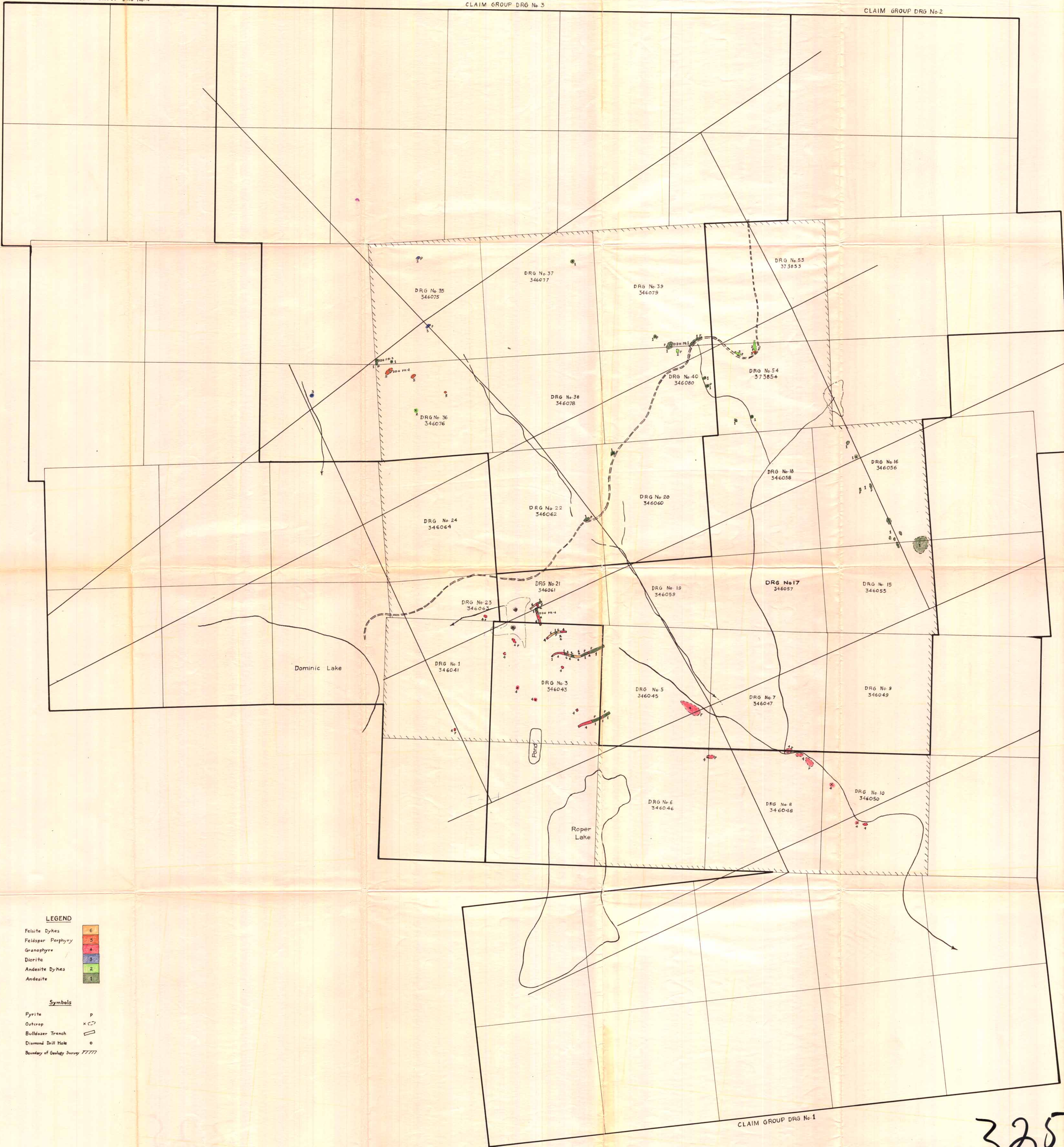
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CLAIM GROUP DRG No. 4

CLAIM GROUP DRG No. 3

CLAIM GROUP DRG No. 2



LEGEND

- Felsite Dykes 6
- Feldspar Porphyry 5
- Granophyre 4
- Diorite 3
- Andesite Dykes 2
- Andesite 1

Symbols

- Pyrite P
- Outcrop x
- Bulldozer Trench U
- Diamond Drill Hole o
- Boundary of Geology Survey 77777

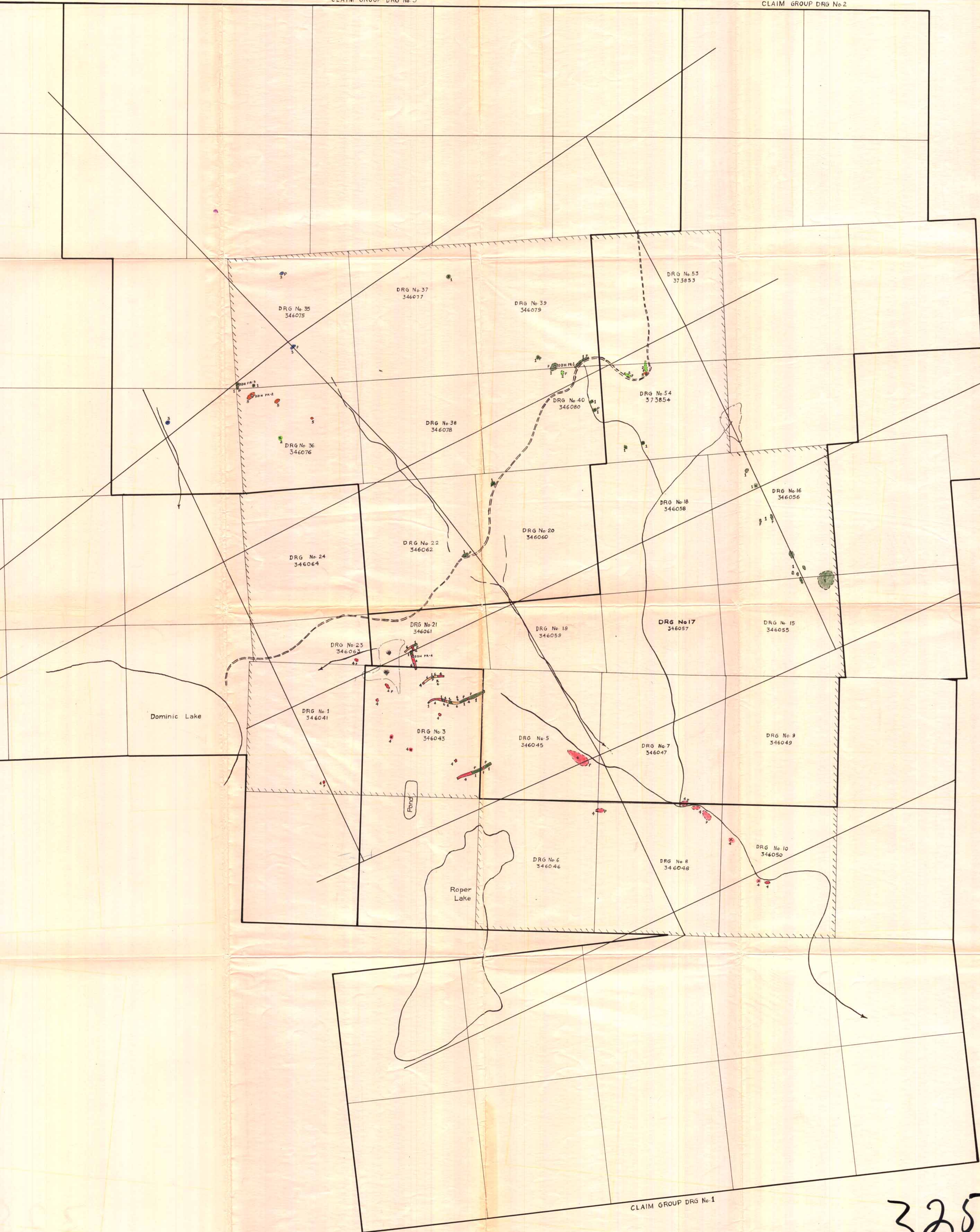
CLAIM GROUP DRG No. 1

325



CLAIM GROUP DRG No. 3

CLAIM GROUP DRG No. 2



Dominic Lake

Roper Lake

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 325 MAP 3

KENNCO EXPLORATIONS (WESTERN) LIMITED

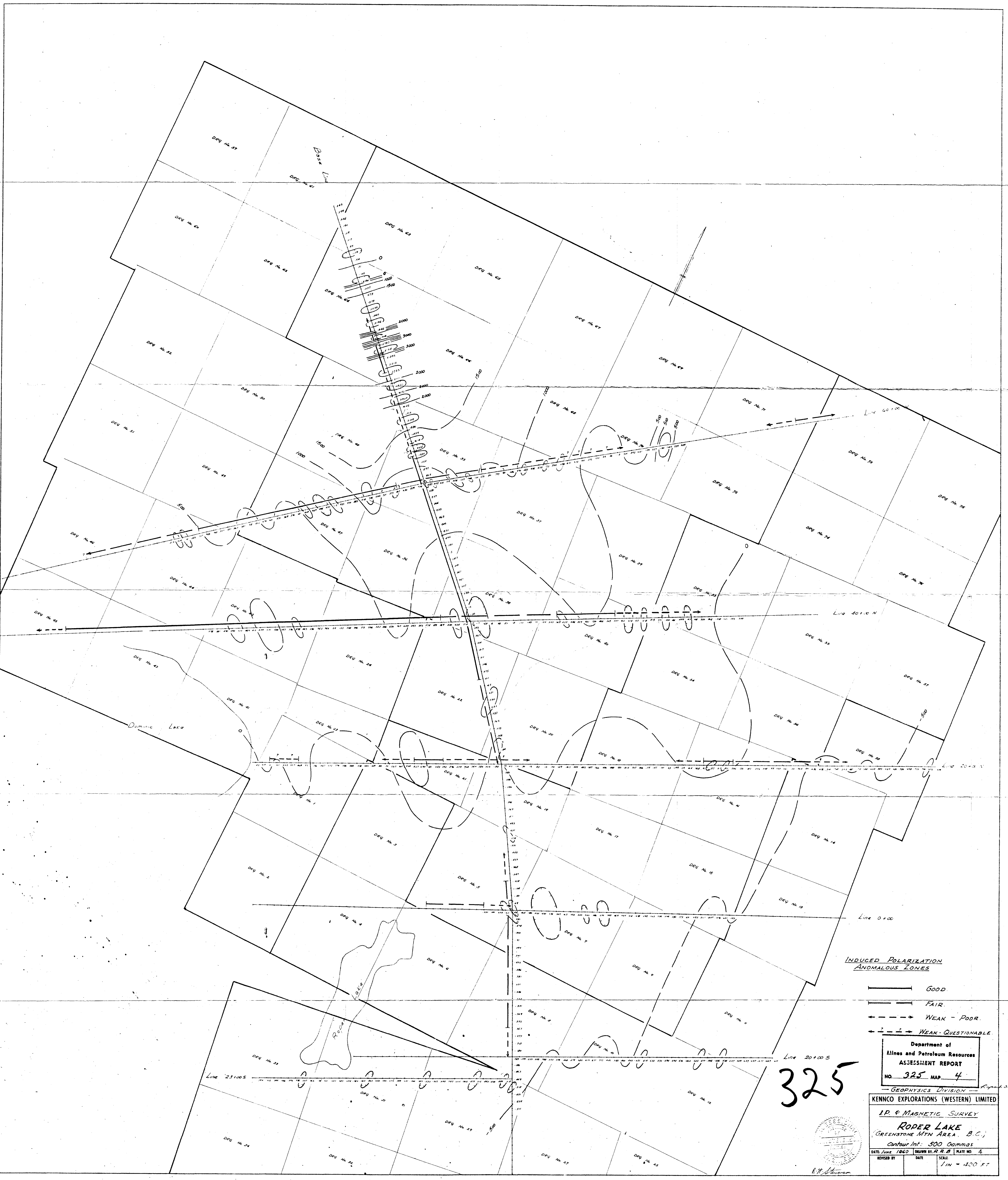
DRG Claim Groups  
Roper Lake Project  
Kamloops Mining Division, B.C.  
Geology

DATE: November 17, 1960 DRAWN BY: R.W.S. PLATE NO. 3  
REVISED BY: DATE: SCALE: 1 inch = 400 feet

325



R.W.S.

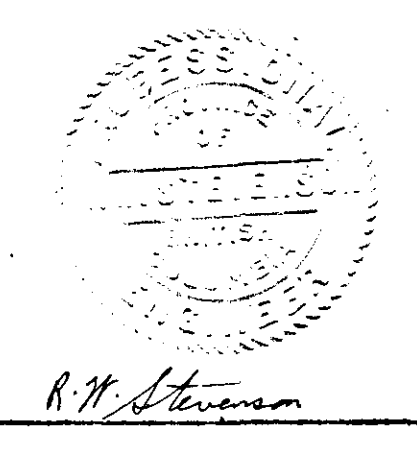


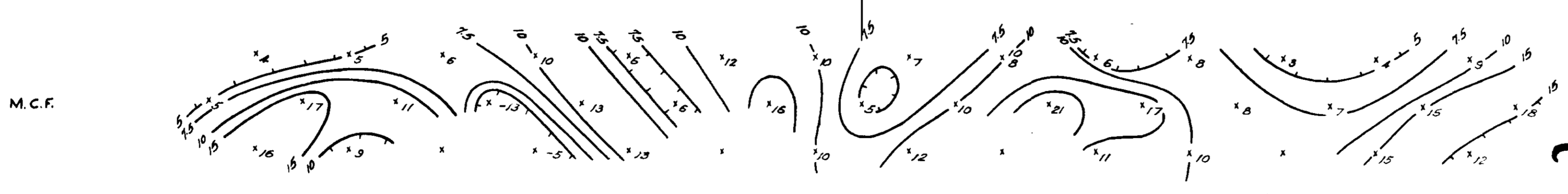
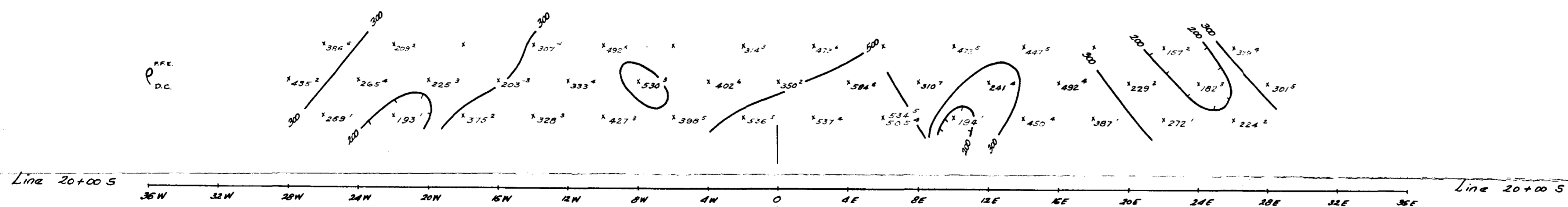
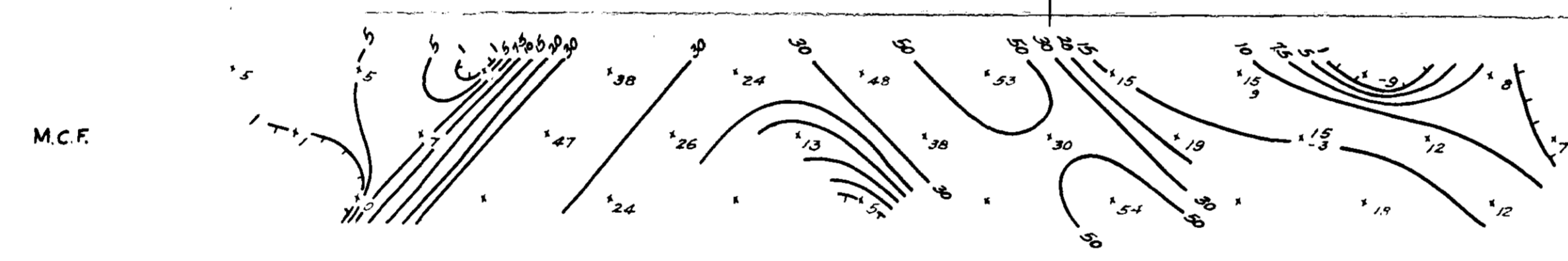
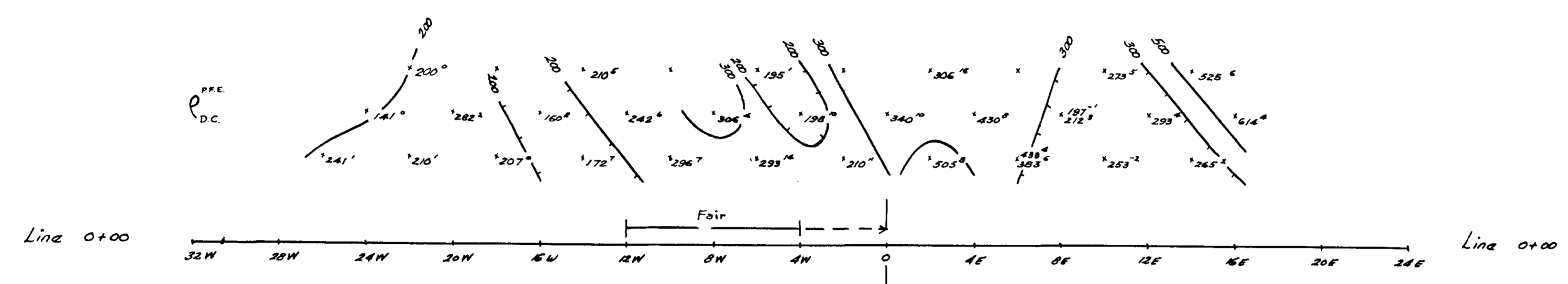
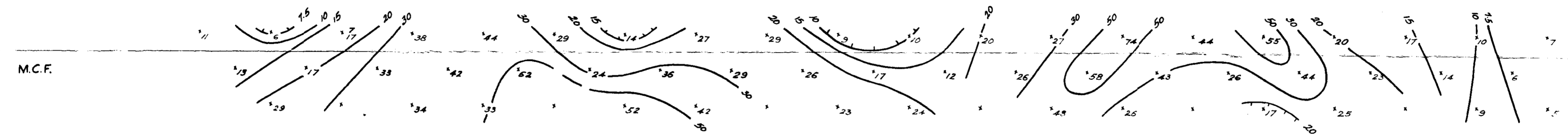
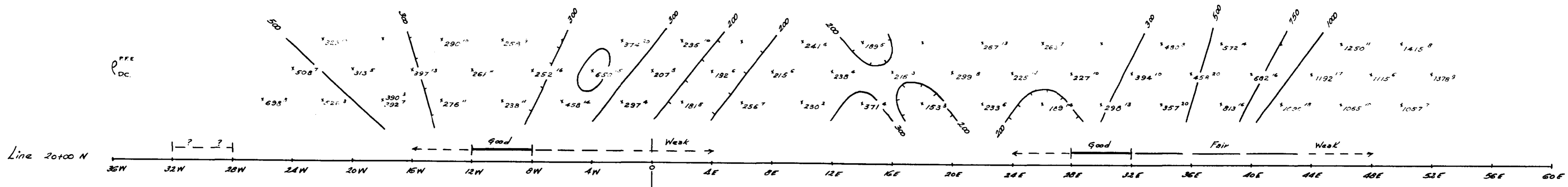
**INDUCED POLARIZATION  
ANOMALOUS ZONES**

——— GOOD  
 - - - FAIR  
 - · - · WEAK - POOR  
 - · - · WEAK - QUESTIONABLE

Department of  
 Mines and Petroleum Resources  
**ASSESSMENT REPORT**  
 No. 325 MAP 4

GEOPHYSICS DIVISION  
**KENNCO EXPLORATIONS (WESTERN) LIMITED**  
 I.P. & MAGNETIC SURVEY  
**ROPER LAKE**  
 GREENSTONE MTN AREA, B.C.  
 Contour Int: 500 Gammas  
 DATE: June 1960 DRAWN BY: R.R.B. PLATE NO. 4  
 REVISION BY: DATE SCALE 1" = 400 FT





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Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 325 MAP 5

Report 325

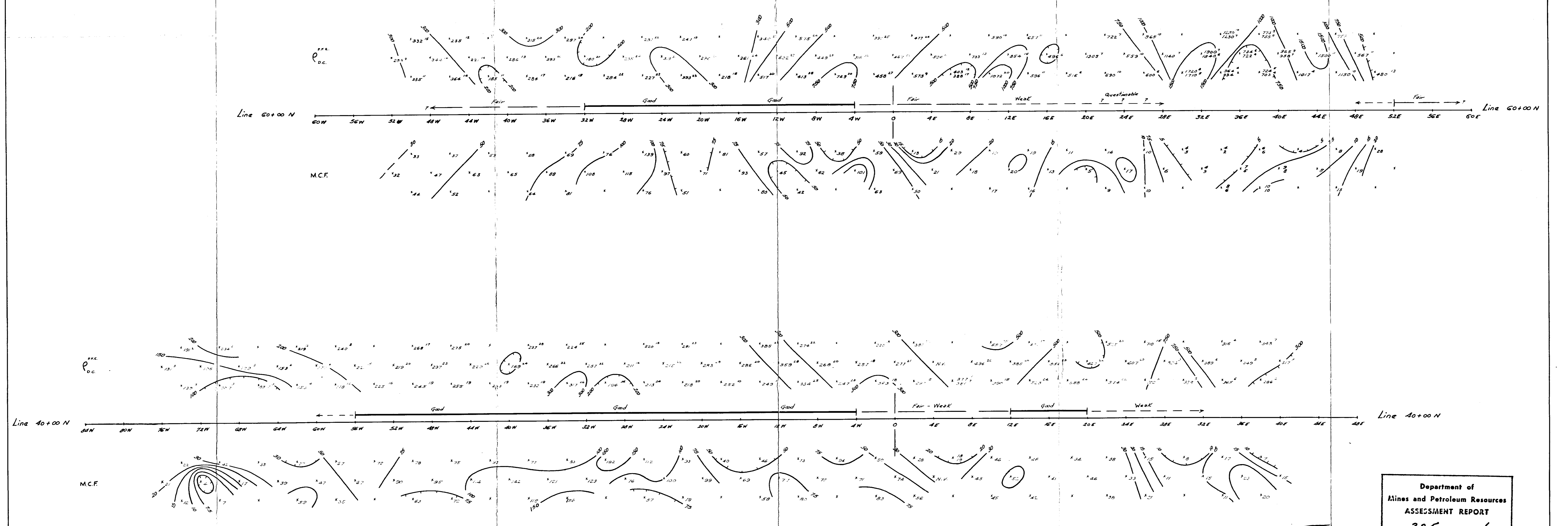
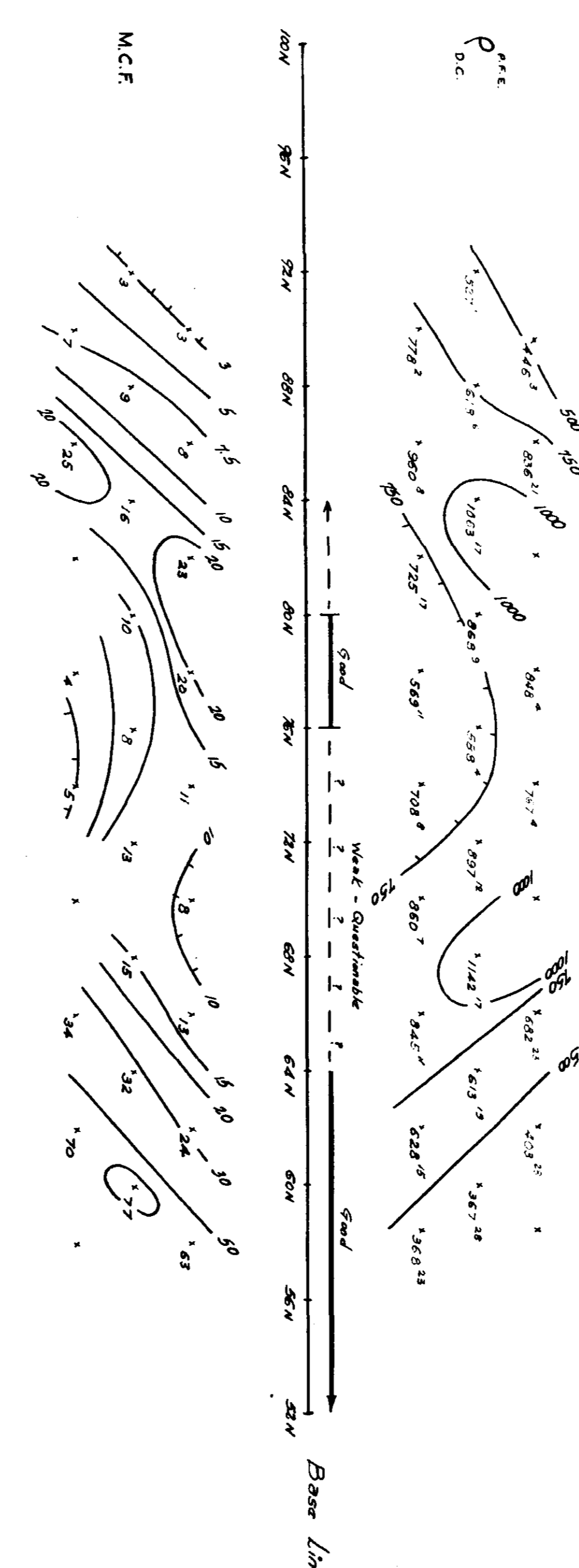


KENNCO EXPLORATIONS (WESTERN) LIMITED  
GEOPHYSICS DIVISION

INDUCED POLARIZATION PROFILES  
ROPER LAKE  
(GREENSTONE BELT AREA, B.C.)

SCALE: 1/4" = 20' line DATA BY: Kennco DATE: May 1963  
CONTOUR INTERVAL: Logarithmic REVISIONS:

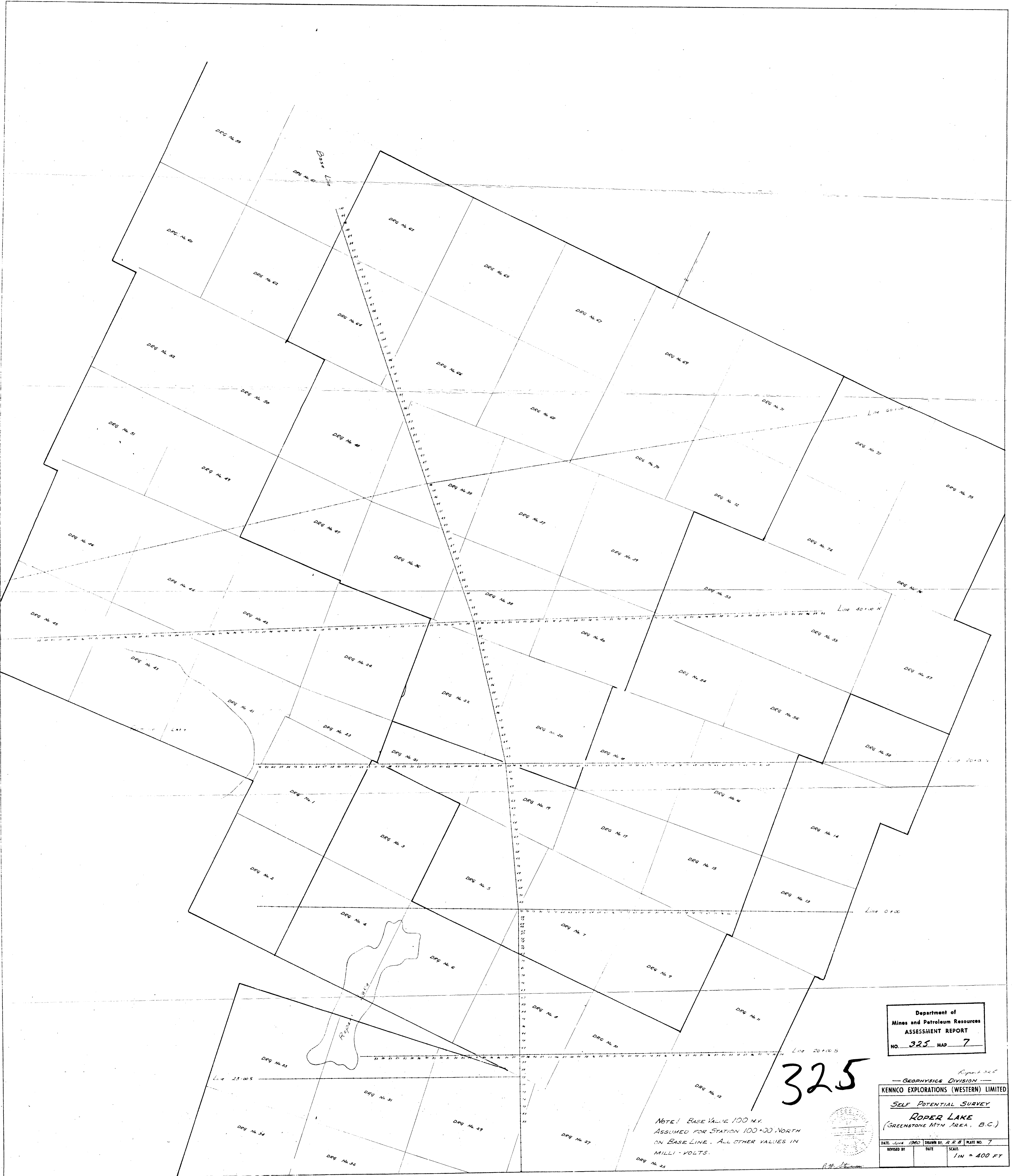
DRAWN BY: R.R.B. DRAWING NO.: 5



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 325 MAP 6

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KENCO EXPLORATIONS (WESTERN) LIMITED  
GEOPHYSICS DIVISION  
INDUCED POLARIZATION PROFILES  
ROPER LAKE  
(GREENSTONE MTN AREA, B.C.)  
SCALE: 1" = 400' HOR. DATA BY: KENCO DATE: JULY 1960  
CONTOUR INTERVAL: Logarithmic REVISIONS:  
DRAWN BY: R.R.B. DRAWING NO.: 6



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 325 MAP 7

325

— GEOPHYSICS DIVISION —  
KENNCO EXPLORATIONS (WESTERN) LIMITED  
SELF POTENTIAL SURVEY  
ROPER LAKE  
(GREENSTONE MTN AREA, B.C.)  
DATE: June 1960 DRAWN BY: A.R.B. PLATE NO. 7  
REVISED BY: DATE: SCALE: 1 IN = 400 FT

NOTE: BASE VALUE 100 M.V.  
ASSUMED FOR STATION 100+00 NORTH  
ON BASE LINE. ALL OTHER VALUES IN  
MILLI-VOLTS.

