2071

RADEM VLF ELECTROMAGNETIC SURVEY

KIM CLAIM GROUP - KIMBERLEY, BRITISH COLUMBIA

N.T.S. 82-G-12

(Kimberley, 49°, 115° N.W.)

Leo D. Kirwan

July 2 - August 9, 1969

Imperial Oil Enterprises Ltd.
500 - 6 Avenue S.W.
Calgary, Alberta

TABLE OF CONTENTS

RADEM VLF ELECTROMAGNETIC SURVEY KIM CLAIM GROUP

VLF ELECTROMAGNETIC METHOD

The VLF (Very Low Frequency) electromagnetic method utilizes the powerful radio wave produced by U.S. Naval transmitters that operate in the very low frequency radio range from 12 to 25 kilocycles.

The direction of the magnetic component of the field from a VLF station is horizontal and perpendicular to the line between the operator and the transmitting station. The Radem receiver unit is essentially a specially designed transistor radio that is used to measure the direction of the magnetic component of the VLF field. The direction of this field, in particular the dip angle, is distorted by the presence of a conductor within the earth. Thus by measuring the dip angles, the presence of a conductor can be detected and its location determined.

The frequency range of the VLF stations is approximately 10 times higher than the normal frequences used in mineral prospecting. This results in the VLF method being more sensitive to lower conductivity and smaller sized bodies than normal EM equipment. Thus, by the same token, the method is sensitive to conductive overburden and conductive overburden will blanket out underlying conductors. The method will also detect weak conductors such as faults and shear zones and thus can be a valuable aid in geological interpretation.

SURVEY INSTRUMENTS

Receiver: Radem EM Unit, Ser. No. 92, Crone Geophysics Ltd.

Transmitter: U.S. Naval Station, Seattle, Washington. 18.6 kc.

SURVEY PROCEDURE

Readings were taken at one hundred foot intervals along previously established east-west lines. The transmitter station, located at Seattle, Washington, is in a west-southwest direction from the property located at Kimberley, British Columbia. Readings were obtained by holding the instrument horizontal and rotating to obtain a null on the audio and corresponding low on the relative field strength meter, to establish the direction of the field. The instrument was then brought to the vertical position and the null obtained by rotating in the vertical plane. The dip angle was read when the null position was obtained. As the transmitter station is located in the west-southwest the dip angles were recorded as north or south and are a measure of the perpendicular to the magnetic field from the vertical in degrees of dip.

Dip angles have been plotted on the survey plan adjacent to the survey stations. North dips are plotted on the north side of the line; south dips on the south side of the line.

The survey was started on July 2nd and completed on August 8.

SURVEY RESULTS

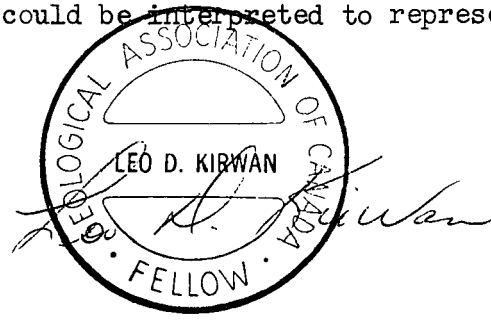
The survey has been plotted as degrees of dip on a plan at a scale of one inch to 500 feet.

The dip angles reveal northeast trending conductors by giving a cross-over from south dips on the west to north dips on the east. Northwest trending conductors give cross-overs from north dips on the west to south dips on the east. East-west trending conductors will give north dips on the adjacent line to the south and south dips on the adjacent line to the north. As this is a relatively new method of electromagnetic surveying, new methods of data analysis are presently being evolved. One of these new methods is to be published in the December issue of the Canadian Geophysical Bulletin. Data analysis may be used in comparison of results over areas of known surface geology to assist in geological interpretation over areas covered by overburden.

The survey data indicates the location of man made conductors on the property. On map sheets No. 1 and No. 2 a pipeline extends northeastward from claim 73, across claims 74, 51, 50, 27 and 26, giving good cross-overs on every line. On map sheet No. 1 a powerline trends northwest across claims 101, 104, and 120. On map sheet No. 3 the same powerline trends westward across claims 173, 175, 177, 179, 181 and 183 adjacent to line 230 south. This powerline prohibited readings being taken along line 230 south and produced corresponding north and south dips on the adjacent lines. A branch powerline extends northeast from claim 183 across claims 182, 197, and 196 and gave distinct cross-overs. On claims 119, 103, 104, and 120 on map sheet No. 2 northeast trending weak conductors correspond with the geological structure. On map sheet No. 3 weak cross-overs indicate northeast trending conductors on claims 155 to 163 and claims 134 to 140. These northwest trending conductors

correspond to geological contacts and northeast trending shear zones in the northeast striking Alderidge formations and the parallel Purcell diorite sills.

The survey results do not indicate a natural conductor of strong magnitude or conductivity that could be interpreted to represent a conductive mineral deposit.



September 1969

Leo D. Kirwan

CERTIFICATE

I, Leo D. Kirwan, of the City of Calgary, Province of Alberta, do hereby certify that:

1. I am a geologist residing at 5039 Vanstone Crescent, Calgary, Alberta.

2. I am a graduate of St. Francis Xavier University with a B.Sc. degree in Geology as of 1952.

3. I have worked as a practicing geologist continuously since 1952, and I am now employed in the Minerals Section of Imperial Oil Enterprises Ltd.

4. I am a member of the Canadian Mining and Metallurgical Institute and a Fellow of the Geological Association of Canada.

Dated at Calgary

This 30th day of September 1969.

Leo D. Kirwan

GROUP # 5

GROUP # 6

GROUP # 3

KIM. FR. No. 10

KIM. FR. No. 11

KIM. FR. No. 6

KIM. FR. No. 7

KIM. FR. No. 8

KIM. FR. No. 9

N.E. CORNER SUBMISSION LEASE 341

ELEC. POWER LINE

I.N. 77, 8

I.P. 91, 2

I.P. 105, 6

F.P. 119

F.P. 117, 118
I.P. 119

49° 39'

20,000

17,500

15,000

12,500

10,000

27,500

25,000

30,000

32,500

35,000

37,500

40,000

VLF ELECTROMAGNETIC SURVEY

INST.:	CRONE GEOPHYSICS RADEM UNIT SEC. NO. 92
TRANSMITTER LOC.:	SEATTLE, WASHINGTON
OPERATOR:	G. STOLLERY
RESULTS PLOTTED:	NORTH POINTING AXIS ON NORTH SIDE OF LINE, SOUTH POINTING AXIS ON SOUTH SIDE OF LINE SHOW IN DEGREES OF DIP FROM VERTICAL

LEGEND
9 —— DEGREES NORTH DIP
5 —— DEGREES SOUTH DIP

NORTH DIP

SOUTH DIP

KIMBERLEY PROJECT

BUSINESS DEVELOPMENT DEPT. - MINERALS

MINERAL CLAIMS

SCALE

ft. 500 0 500 1000 ft.

2

NOVEMBER 1968

LEO G. HIRWAN
CANADIAN GEOPHYSICAL ASSOCIATION OF CANADA
FELLOW


182
180
178
176
175
173
171
169
167
75
73
183
181
179
177
ELEC POWER LINE
POWER LINE
CL. POSTS 180,1,2,3
CL. POSTS 178,79,80,81
CL. POST 176,177,178,179
CL. POST 174,5,6,7
172,3,4,5
KIM. FR. # 1.
KIM. FR. # 2
KIM. FR. # 3
KIM. FR. # 10
KIM. FR. # 12
LONE PINE HILL
N.E. Corner Div.13 L.341
164
162
160
158
156
154
152
150
148
146
165
163
161
159
157
155
153
151
149
147
GROUP # 3
CL. POST 162,3,4,5
CL. POST 160,1,2,3
CL. POST 158,59,60,61
CL. POST KIM 156,59
CL. POST 154,5,6,7
CL. POST 152,3
CL. POST KIM 150,1,2,3
I.P. 150,1
F.P. 148,9
146,7,8,9
KIM. FR. # 4
KIM. FR. # 5
KIM. FR. # 6
204
205
140
141
138
139
136
137
134
135
132
133
130
131
128
129
126
127
124
125
CL. POST KIM 138,9,40,41
CL. POST KIM 134,5,6,7
CL. POST KIM 132,3,4,5
130,1,2,3
128,9,30,31
F.P. 126,7
124,5,6,7
49° 39'
115° 55'
VLF ELECTROMAGNETIC SURVEY
INST.: CRONE GEOPHYSICS RADEM UNIT SEC. NO. 92
TRANSMITTER LOC.: SEATTLE, WASHINGTON
OPERATOR: G. STOLLERY
RESULTS PLOTTED: NORTH POINTING AXIS ON NORTH SIDE OF LINE, SOUTH POINTING AXIS ON SOUTH SIDE OF LINE SHOW IN DEGREES OF DIP FROM VERTICAL
S
N
NORTH DIP
SOUTH DIP
LEGEND
9 —— DEGREES NORTH DIP
5 —— DEGREES SOUTH DIP
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2071 MAP 3
KIMBERLEY PROJECT
BUSINESS DEVELOPMENT DEPT. - MINERALS
MINERAL CLAIMS
SCALE
500 0 500 1000 ft.
NOVEMBER 1968
2071 3
3


KIMBERLEY PROJECT
BUSINESS DEVELOPMENT DEPT. - MINERALS
MINERAL CLAIMS
SCALE
500 0 500 1000
NOVEMBER 1968
4
LEO D. KIRWAN
GEOLOGICAL ASSOCIATION OF CANADA
FELLOW
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2071 MAP 4
VLF ELECTROMAGNETIC SURVEY
INST.: CRONE GEOPHYSICS RADEM UNIT SEC. NO. 92
TRANSMITTER LOC.: SEATTLE, WASHINGTON
OPERATOR: G. STOLLERY
RESULTS PLOTTED: NORTH POINTING AXIS ON NORTH SIDE OF LINE, SOUTH POINTING AXIS ON SOUTH SIDE OF LINE SHOW IN DEGREES OF DIP FROM VERTICAL
S
N
NORTH DIP
SOUTH DIP
LEGEND
9 — DEGREES NORTH DIP
5 — DEGREES SOUTH DIP
11,000
13,500
16,000
18,500
21,000
23,500
26,000
31,500
29,000
26,500
24,000
21,500
N.E. CORNER LOT 9951
N.E. CORNER LOT 9952
L140
L142
L145
L150
L155
L160
L165
L170
L175
L180
L185
L190
L195
L200
L205
L210
L215
GROUP #1
GROUP #2
GROUP #4
POWER LINE
CL POST 200,1,2,3
CL POST 198,9,200,201
CL POST 198,9,31,32
F.P. 202,3.
F.P. 190, I.P. 191
F.P. 196,197
209
207
208
206
202
203
200
201
198
199
32
30
28
31
29
27
186
184
188
190
191
189
187
185
54
52
53
51
196
194
192
195
193
197
180
178
176
174
172
170
168
166
182
76
74
2071
4

KIMBERLEY PROJECT

BUSINESS DEVELOPMENT DEPT. - MINERALS

MINERAL CLAIMS

SCALE

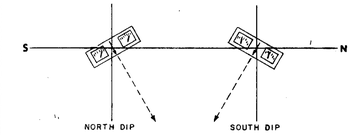
ft. 500 0 500 1000 ft.

1

NOVEMBER 1968

VLF ELECTROMAGNETIC SURVEY

INST.:	CRONE GEOPHYSICS RADEM UNIT SEC. NO. 92
TRANSMITTER LOC.:	SEATTLE, WASHINGTON
OPERATOR:	G. STOLLERY
RESULTS PLOTTED:	NORTH POINTING AXIS ON NORTH SIDE OF LINE, SOUTH POINTING AXIS ON SOUTH SIDE OF LINE SHOW IN DEGREES OF DIP FROM VERTICAL



LEGEND
9 —— DEGREES NORTH DIP
5 —— DEGREES SOUTH DIP

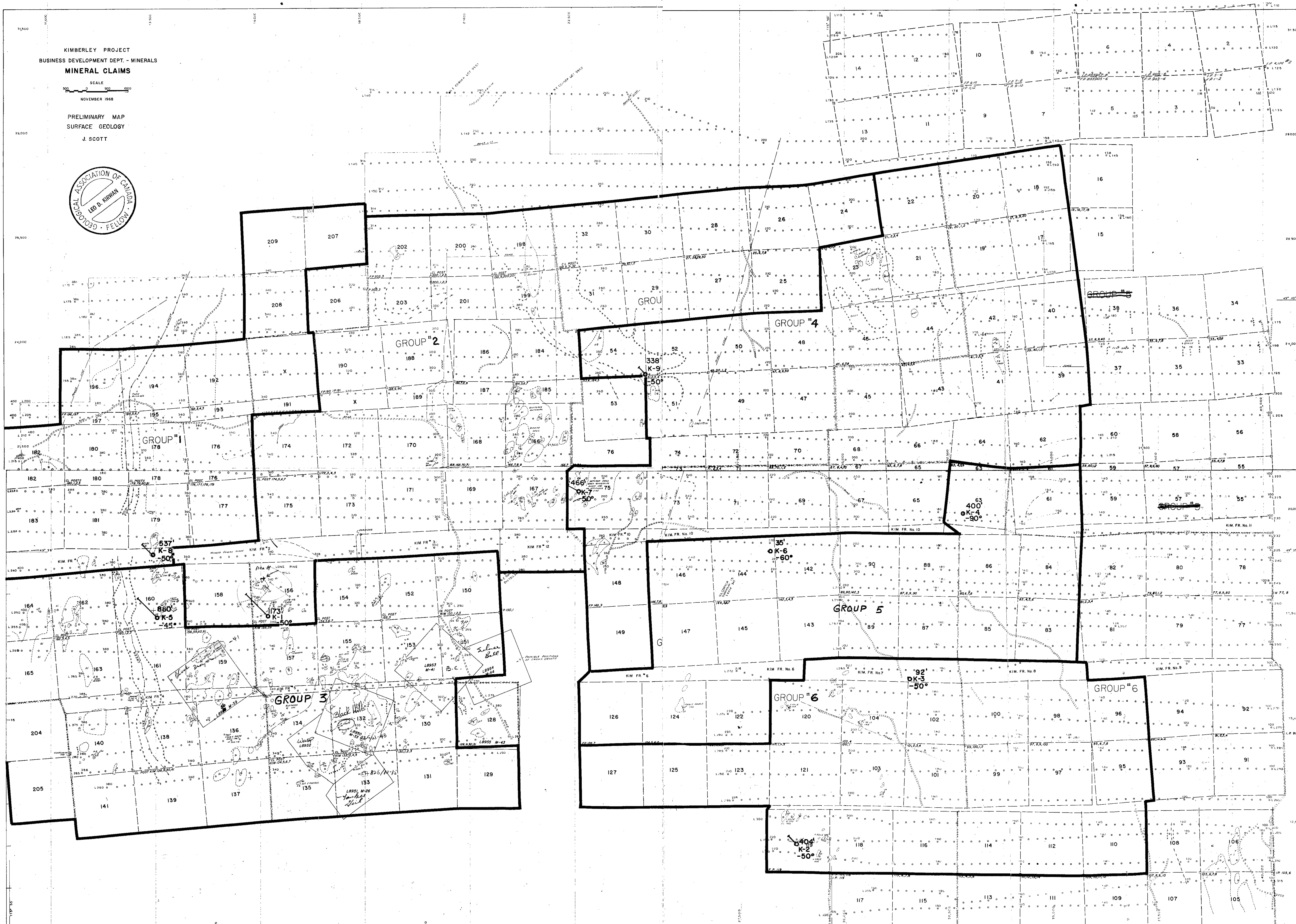
GROUP #4

GROUP #5

2071

1

2071


KIMBERLEY PROJECT
BUSINESS DEVELOPMENT DEPT. - MINERALS
MINERAL CLAIMS
SCALE
NOVEMBER 1968
PRELIMINARY MAP
SURFACE GEOLOGY
J. SCOTT
GEOLOGICAL ASSOCIATION OF CANADA · FELLOW · LEO D. KIRWAN
GROUP #1
GROUP #2
GROUP 3
GROUP #4
GROUP 5
GROUP #6
338' K-9 -50°
466' K-7 -50°
400' K-4 -90°
537' K-8 -50°
35' K-6 -60°
860' K-5 -45°
173' K-1 -50°
92' K-3 -50°
404' K-2 -50°
KIM. FR. No. 10
KIM. FR. No. 6
KIM. FR. No. 7
KIM. FR. No. 8
KIM. FR. No. 9
KIM. FR. No. 11

2071