63.3143

AIRBORNE ELECTROMAGNETIC SURVEY

DICKENSON MINES LTD

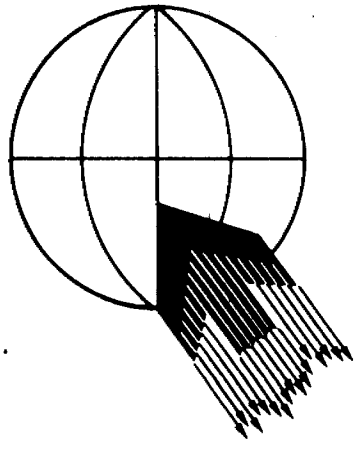
BALMER LAKE AREA

ONTARIO

RL-14

FILE NO: 14002

rveys Limited, 20 Canso Rd., Rexdale, Ontario, Canada.



INTRODUCTION

This report contains our interpretation of the results of an airborne electromagnetic survey flown in the Balmer Lake Area, Ontario, on March 24th, 1972. A brief description of the survey procedure together with recommendations for ground follow-up is included.

The survey totalled 417 line miles and was performed by Questor Surveys Limited. The survey aircraft was a Super Canso CF-JMS and the operating base was Red Lake, Ontario.

The area outline is shown in a 1:250,000 map at the end of this report. This is part of the National Topographic Series sheet number 52N.

MAP COMPILATION

The base maps are uncontrolled mosaics constructed from Ontario Lands and Forests 1" = ¼ mile photographs. These mosaics were reproduced at a scale of 1" = ¼ mile on stable transparent film from which white prints can be made.

Flight path recovery was accomplished by comparison of the prints of the 35 mm film with the mosaic in order to locate the fiducial points. These points are approximately one mile apart.

SURVEY PROCEDURE

Terrain clearance was maintained as close to 400 feet as possible, with the E.M. Bird at approximately 150 feet above the ground. A normal S-pattern flight path using approximately one mile turns was used. The equipment operator logged the flight details and monitored the instruments.

A line spacing of 500 feet was used.

INTERPRETATION AND RECOMMENDATIONS

A great many anomaly intercepts were intersected in this survey area and from available data it appears that many of these conductors have been adequately explained by work previously carried out. However, there still remains several targets which are felt to be good base metal targets. It is difficult to assess the mass of multiple conducting zones which conform to the iron formations within the metasediments even though they may have some economic significance. A general investigation of the past work that has been done on these multiple conducting zones along with a reconnaissance prospecting venture is prescribed for these conductors. From available data (Ferguson 1960-61) some diamond drilling has been done on these iron formations but the exact cause of the anomalies was not revealed, ie., sulphides, graphite or banded magnetite.

All of the conductors, (with some exceptions) are felt to have bedrock sources. The exceptions are circled with a broken line on the map and these are interpreted to have there source in the surface material. No work is

recommended on these zones. Since the remainder of the conductors are bedrock they could all have some economic significance. Some of these, however, can be eliminated from past work.

The long conductor within East Bay of Red Lake appears to be caused from serpentinite. Anomalies arising from serpentinite can be recognized by their broad character and the rate of decay of transient as shown by the ratios of the channel amplitudes. No further work is recommended on this long conductor.

West of East Bay there is a series of formational conductors which do not appear very interesting, except for one zone which is described later. Conductive sediments are the probable causes of these formational zones.

Several conductors have been selected for investigation on the ground and the reasons for these selections are given in a brief discussion of each zone that follow. The higher priority targets are those that are isolated, have a limited strike length and have a good conductivity-width parameter. However, in an established mining area such as this, small weak zones are quite important and should be given close attention on the ground.

The conductors that have been singled out and given a number on the map are the writers preference for ground investigation. These selections should, however, not be treated as absolute since any of the bedrock conductors could reflect an economic body. Due to the abundance of conductors, a priority selection has been made. The client would have more detailed information with regard to work

already done in the area and of the geology and therefore these priorities could change.

In the northern portion of the survey area, the strike of the conductors is random and a different interpretation can be arrived at depending on which flight direction is used. Ground work is suggested on some of these anomalies prior to any line cutting so that an optimum grid can be cut.

Considerable hydro influence exists over the town area and as a result there could be some bedrock conductors within the built-up area which could not be distinguished.

Due to their isolation and the fact that no apparent work has been done, zones 12, 13, 14, 28 and 35 have to be regarded as top priority targets.

ZONE #1.

Drilling has been done on these two conductors within the andesite, and pyrite, pyrrhotite and copper mineralization have been noted. Good conductivity is exhibited by the intercepts and the magnetic association with the northern conductor indicate pyrrhotite.

ZONE #2.

Ground work is suggested on this strong, good conductivity conductor within the rhyolite. The magnetic correlation with the intercepts could indicate the presence of pyrrhotite. Ground work is recommended.

ZONE #3.

This conductor parallels zone 2 and is in the same geologic invironment. The conductor is strong and a good conductivity-width product is exhibited by the conductor intercepts. Ground work is recommended even though there

has been some diamond drilling done in the area.

ZONE #4.

Good conductivity is shown by the responses of this conductor. The zone is open to the west. Ground work is recommended.

ZONE #5.

Due to the fact that this conductor is in good geological invironment and close to an operating mine, it should be given some attention on the ground. The anomalies are weak, but appear to be legitimate bedrock responses.

ZONE #6.

This short conductor exhibits a good conductivity-width product similar to those that result from a small sulphide body. Ground work is recommended.

ZONE #7, and #8.

Both of these conductors could extend further in each direction. Radio interference disturbs the records to east of these conductors. The anomaly intercepts are sharp and are good conductivity-width responses. Ground work is suggested on both of these conductors.

ZONE #9.

These two parallel conductors within the basic volcanics are characterized by sharp, good conductivity responses. The drilling which has been done in the area should be assessed to see if these conductors have been adequately explained. If not, further work is recommended.

ZONE #10.

No apparent work (Ferguson 1960-61) has been done on this strong conductor within the sediments. Good conductivity is shown by the intercepts and the high magnetic correlation may be indicative of an iron formation. Ground work is suggested.

ZONE #11.

This conductor which appears to be associated with an iron formation appears to have been drilled. Moderate conductivity and strength are exhibited by the anomalies.

ZONE #12.

Pyrrhotite may be the cause of this isolated target within the basic volcanics. Good conductivity is shown by intercepts which have a direct magnetic correlation. This has to be regarded as a top priority target.

ZONE #13.

This conductor probably extends farther to the east out of the survey area. The anomalies are strong and indicate a good conductivity-width product similar to those that result from massive sulphides. If this ground conductor does not extend too far to the east, it is a top priority target.

ZONE #14.

These weak anomalies are definate bedrock responses which do not appear to have been worked on in the past. The magnetic correlation with the intercepts could indicate the presence of sulphides and the apparent isolation of the conductor makes it a good priority target.

ZONE #15.

Intercept 35N is a sharp good conductivity response which has a direct magnetic correlation of 125 gammas. This conductor appears to have a short length but lies within an area of multiple conducting zones in the basic volcanics. Drilling has been done in the area and pyrite and pyrrhotite have been intersected. This conductor should be checked if the conductor has not been explained.

ZONE #16.

The two anomalies which make up this short conductor are sharp and indicate good conductivity. Apparently no work has been done on this conductor within the basic volcanics, so it should be given some attention on the ground.

ZONE #17.

This weak conductor which is on strike with zone 16, should be given some attention on the ground. It appears to be a legitimate bedrock conductor.

ZONE #18.

This fair conductor parallels the iron formation and may be caused by formational sulphides within the sediments. Ground work on a medium priority is recommended.

ZONE #19.

This double conductor lies within basic volcanic rocks and conforms to a conductor which has been marked on the geological compilation map. The drilling which has been done in the area shows that this conductor has been intersected at the west end, and sulphides were encountered in this drill hole. The conductivity exhibited by the airborne anomalies suggests good conductivity and the magnetic correlation with some of

the intercepts could indicate pyrrhotite. Further work is recommended on this conductor.

ZONE #20.

Drilling has been done in the vicinity of this strong conductor which appears to be associated with an iron formation. Sulphides within the iron formation could possibly be the cause. Past diamond drilling does not appear to have intersected this conductor at its strongest parts. Ground work is definately warranted on this conductor.

ZONE #21.

This apparent short conductor lies within basic volcanics adjacent to a strong conductive horizon to the north. The apparent conductivity-width of this conductor is moderate and the subtle magnetic correlation with intercept 31C may indicate sulphides. It is dufficult to ascertain if past drilling has intersected this conductor. If an adequate explanation cannot be made of this conductor by past work, ground work is definately warranted.

ZONE #22.

An orientation ground electromagnetic survey is suggested prior to any line cutting in order to establish the strike of the conductor. It appears that the zone is a circular one but this is only conjecture. A moderate conductivity-width product is exhibited by the anomalies and it is apparent that the conductor has its source in bedrock. Since no previous work has been indicated on this conductor, ground work should be carried out.

ZONE #23.

Apparently this conductor has been drilled but there is no information on the map (Ferguson 1960-61) to suggest the cause of this conductor. The anomaly intercepts are strong and indicate a good conductivity-width product indicative of anomalies resulting from massive sulphides. Dacite, hornblende amphibolite and quartz monzonite porphyry have been logged in the drill holes. If an adequate explanation of this conductor has not been made from past work, then further work is suggested.

ZONE #24.

This short zone lies within an area of multiple conductors probably within a sedimentary environment. Graphite or formational sulphide have to be suspected in this type of environment. Zone 24, however, appears to be short and somewhat isolated and the anomalies indicate a moderate conductivity-width product. Ground work is suggested on this zone.

ZONE #25.

Better definition of these conductors resulted from the north-south flying than on the east-west flying and as a result the strike of the conductors are interpreted as shown on the map. The anomalies are strong and exhibit a good conductivity-width product and there is magnetic correlation with some of the intercepts. Sulphides could possibly be a cause. Ground work is warranted especially on the southern conductor, ie., intercepts 6D, 7D, 8D and 9C. Dacite has been mapped in the area.

ZONE #26.

This moderate conductor was intersected by the flying in both directions. Ground work on a moderate priority is suggested.

ZONE #27.

A moderate priority is given to this conductor within the basic volcanics. Fair conductivity is shown by the intercepts. Ground work is suggested.

ZONE #28.

This conductor has to be regarded as a top priority target because of its isolation within the basic volcanics. The anomalies are well defined and exhibit a good conductivity-width product similar to what would be expected from massive sulphides. There is no magnetic correlation with these intercepts, however, the conductor appears to be on a magnetic anomaly which has been shown on the geological map (Map 2016 Bateman Township - Southern Part). This ground magnetic anomaly would be too small for an airborne magnetic response.

ZONE #29, and #30.

The poor conductivity and the high direct magnetic association indicates that the source of these two zones is a magnetic one probably serpentinite. No further work is suggested on these zones.

ZONE #31.

This conductor lies in a sedimentary geologic environment and is associated with the mass of conductors to the south. The intercepts are broad and display a moderate conductivity-width product. Graphite has to be suspected.

ZONE #32.

Even though these two conductors are weak they apparently have their source in bedrock. Moderate conductivity is exhibited by the intercepts which could have resulted from minor sulphides. Ground work is suggested because they are isolated and are lying within the basic volcanics.

ZONE #33.

Pyrite and pyrrhotite have been reported in the vicinity of these two conductors which lie within the granitized greenstone. The intercepts are strong, exhibit good conductivity and have a direct magnetic association. Massive sulphides are assumed to be the cause of these conductors. Further work is recommended if both of these conductors have not been adequately explained.

ZONE #34.

This single intercept conductor is poorly defined because of poor coupling between the aircraft E.M. system and the ground conductor. The conductor is apparently striking at an oblique angle to the flight line. However, it appears to be a legitimate bedrock conductor with an airborne magnetic anomaly of 40 gammas. Ground work is definately warranted as sulphides could be a cause.

ZONE #35.

The anomalies of this conductor are strong, and exhibit an excellent conductivity-width product. A wide sulphide body is probably the cause of this conductor. Apparently, some ground geophysical work has been done on this conductor in the past but there is no evidence on this map (Ferguson 1960-61) to indicate the cause of the conductor. Further work is recommended.

ZONE #36.

This conductor was not intersected with the east-west flying as it lies between lines 68 and 69. The E.M. responses are broad but exhibit a good conductivity-width product, such as would be expected from massive sulphides. This conductor may be an extension of zone #31 and should be checked at the same time as zone #31 is being investigated.

ZONE #37.

A reconnaissance ground electromagnetic survey is suggested prior to cutting a grid to ascertain the strike direction of this conductor. There is better coupling in the north-south directional flying which would suggest an east-west strike. Good conductivity is exhibited by the intercepts and there is a small magnetic correlation with two of the anomalies which could indicate the presence of sulphides.

David Watson.

D. M. Watson

APPENDIX

EQUIPMENT

The aircraft are equipped with Mark V INPUT airborne E.M. systems and Barringer AM-101A or AM-104 proton precession magnetometers. Radar altimeters are used for vertical control. The outputs of these instruments together with fiducial timing marks are recorded by means of galvanometer type recorders using light sensitive paper. Thirty-five millimeter continuous strip cameras are used to record the actual flight path.

(I) MARK V INPUT(R) SYSTEM

The Induced Pulse Transient (INPUT) system is particularly well suited to the problems of overburden penetration. Currents are induced into the ground by means of a pulsed primary electromagnetic field which is generated in a transmitting loop around the aircraft. By using half sine wave current pulses and a loop of large area-turns, the high output power needed for deep penetration is achieved.

The induced current in a conductor produces a secondary electromagnetic field which is detected and measured after the termination of each primary pulse. Detection is accomplished by means of a receiving coil towed behind the aircraft on four hundred feet of cable,

and the received signal is processed and recorded by equipment in the aircraft. Since the measurements are in the time domain rather than the frequency domain common to continuous wave systems, interference effects of the primary transmitted field are eliminated. The secondary field is in the form of a decaying voltage transient originating in time at the termination of the transmitted pulse. The amplitude of the transient is, of course, proportional to the amount of current induced into the conductor and, in turn, this current is proportional to the dimensions, the conductivity and the depth beneath the aircraft.

The rate of decay of the transient is inversely proportional to conductivity. By sampling the decay curve at six different time intervals, and recording the amplitude of each sample, an estimate of the relative conductivity can be obtained. By this means, it is possible to discriminate between the effects due to conductive near-surface materials such as swamps and lake bottoms silts, and those due to genuine bedrock sources. The transients due to strong conductors such as sulphides exhibit long decay curves and are therefore commonly recorded on all six channels. Sheet-like surface materials, on the other hand, have short decay curves and will normally only show a response in the first two or three channels.

The samples, or gates, are positioned at 260, 480, 755, 1100, 1575, and 2100 micro-seconds after the cessation of the pulse. The widths of the gates are 225, 225, 320, 410, 500, and 540 micro-seconds respectively.

For homogeneous conditions, the transient decay will be exponential and the time constant of decay is equal to the time difference at two successive sampling points divided by the log ratio of the amplitudes at these points.

(II) BARRINGER AM-101A PROTON PRECESSION MAGNETOMETER

The AM-101A magnetometer which measures the total magnetic field has a sensitivity of 5 gammas and a range of 20,000 to 100,000 gammas.

Because of the high intensity field produced by the INPUT transmitter, the magnetometer results are recorded on a time-sharing basis. The magnetometer head is energized while the transmitter is on, but the read-out is obtained during a short period when the transmitter is off. Using this technique, the head is energized for 1.15 seconds and then the transmitter is switched off for 0.15 seconds while the precession frequency is being recorded and converted to gammas. Thus a magnetic reading is taken every 1.3 seconds.

DATA PRESENTATION

The symbols used to designate the anomalies are shown in the legend on each map sheet, and the anomalies on each line are lettered in alphabetical order in the direction of flight. Their locations are plotted with reference to the fiducial numbers on the visicorder record.

A sample record is included at the end of the report identifying the method used to correct for the position of the E.M. "Bird" and identifies the parameters on each channel. Occasionally, a question mark may be shown alongside the anomaly symbol. This may occur when the response is very weak and there is some doubt as to whether or not it is caused by turbulence of compensation noise caused by large changes in the position of the "bird" relative to the aircraft.

All the anomaly locations, magnetic correlations, and the amplitudes of channel number 4 are listed on the data sheets accompanying the final maps.

GENERAL INTERPRETATION

The INPUT system will respond to conductive overburden and near-surface horizontal conducting layers in addition to bedrock conductors. Differentiation is based on the rate of transient decay, magnetic correlation and the anomaly shape together with the conductor pattern and topography.

Power lines sometimes produce spurious anomalies but these can be identified by reference to the monitor channel.

Railroad and pipeline responses are recognized by studying the film strips.

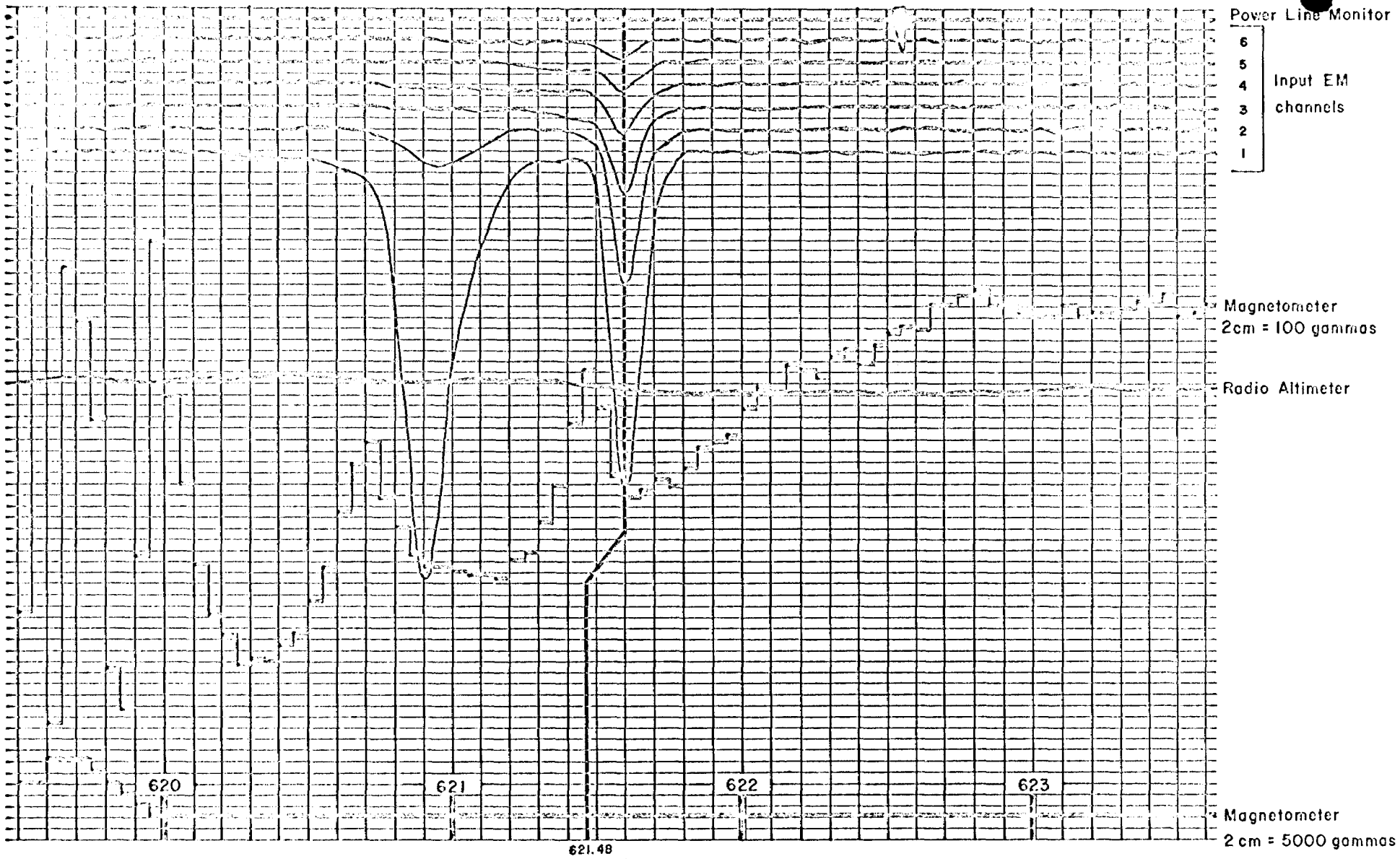
Graphite or carbonaceous material exhibits a wide range of conductivity. When long conductors without magnetic correlation are located on or parallel to known faults or photographic linears, graphite is most likely the cause.

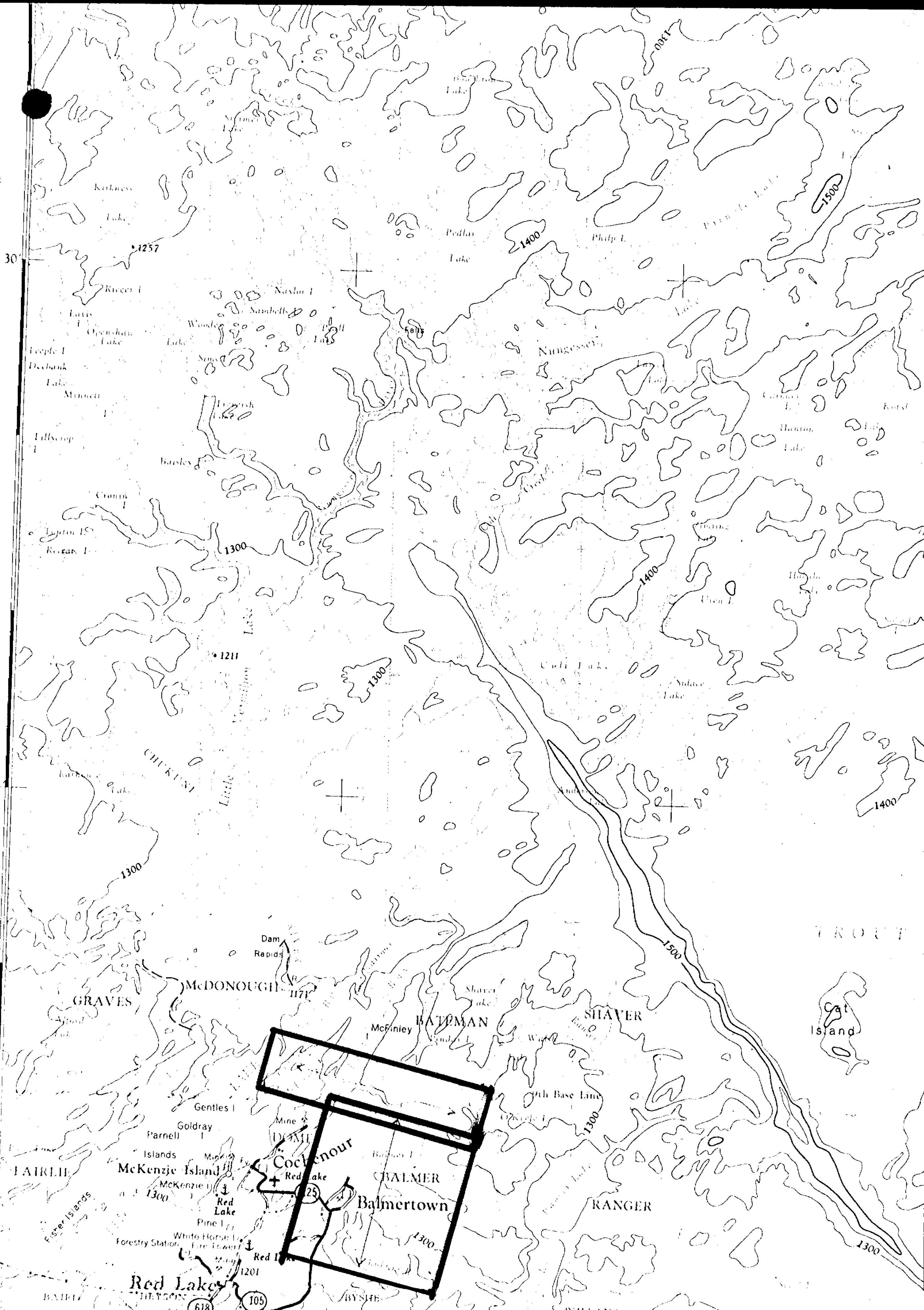
Contact zones can often be predicted when anomaly trends coincide with the lines of maximum gradient along a flanking magnetic anomaly. It is unfortunate that graphite can also occur as relatively short conductors and produce attractive looking anomalies. With no other information than the airborne results, these must be examined on the ground.

Serpentinized peridotites often produce anomalies with a character that is fairly easy to recognize. The conductivity which is probably caused in part by magnetite, is fairly low so that the anomalies often have a fairly large response on channel #1; they decay rapidly, and they have strong magnetic correlation. INPUT E.M. anomalies over massive magnetites show a relationship to the total Fe content. Below 25 - 30%, very little or no response at all is obtained, but as the percentage increases the anomalies become quite strong with a characteristic

rate of decay which is usually greater than that produced by massive sulphides.

Commercial sulphide ore bodies are rare, and those that respond to airborne survey methods usually have medium to high conductivity. Limited lateral dimensions are to be expected and many have magnetic correlation caused by magnetite or pyrrhotite. Provided that the ore bodies do not occur within formational conductive zones as mentioned above, the anomalies caused by them will usually be recognized on an E.M. map as priority targets.


Power Line Monitor
6
5
4
3
2
1
Input EM
channels
Magnetometer
2cm = 100 gammas
Radio Altimeter
620
621
622
623
Magnetometer
2 cm = 5000 gammas
621.48


30'
1257
Pedlar Lake
Philip L.
1400
1500
1300
Falls
Nungesser
1211
15'
Little
CHUKUNI
TROUT
Dam
Rapids
GRAVES
McDONOUGH
1171
Shaver Lake
BATEMAN
SHAVER
McFinley
Cat Island
9th Base Line
Gentles I
Goldray
Parnell I
Islands
McKenzie Island
McKenzie I
FAIRLIE
Cochenour
Red Lake
BALMER
Balmertown
RANGER
Fisher Islands
Pine I
White Horse I
Forestry Station
Fire Tower
1201
Red Lake
125
105
618

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
1 A	454.67	2			454.85	50 %	
B	455.78	6	.30	200 %			
C	456.30	5	.10		456.35	90 %	
D	.62	5	.08		456.70	70 %	
E	.94	5	.08	50 %			
F	457.89	6	.20		457.95	60 %	
G	458.12	3			457.95	60 %	
2 A	468.13	3			468.25	55 %	
B	469.22	5	.10	80 %			
C	.36	5	.05		Flanks	B	
D	.75	6	.15	70 %			
E	470.08	4	.02		470.15	35 %	
F	.37	4	.05	30 %			
G	471.30	6	.15		471.35	40 %	
H	.52	2			471.35	40 %	
3 A	481.85	5	.06	60 %			
B	.95	5	.10		Flanks	A	
C	483.03	3			483.15	115 %	
D	.96	5	.10	80 %			
E	484.21	2		-			
4 A	494.28	4	.02	80 %			
B	.40	4	.05		Flanks	A	
C	495.43	4	.05		495.60	90 %	
D	496.42	6	.35	150 %			
E	.69	2		-			
5 A	504.09	3			504.15	360 %	
B	.52	3		50 %			
C	506.48	4	.05	45 %			Shoulder Mag
D	507.59	4	.03	-			
E	508.60	6	.10	100 %			
F	.90	2		-			

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Page No. 2

Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
6 A	516.81	3		320 ♂			
B	517.18	4	.02	-			
C	.75	6	.35	-			
D	518.05	3			518.10	40 ♂	
E	.36	3		-			
F	521.37	6	.35	110 ♂			
G	.68	2		-			
H	522.07	3		-			
7 A	529.68	3			529.75	180 ♂	
B	.97	4	.05		529.90	50 ♂	Shoulder Mag.
C	530.62	6	.30	25 ♂			
D	.88	4	.05		Flanks	E	
E	531.03	3		180 ♂			
F	.32	4	.08		Flanks	G	
G	.44	3		30 ♂			
H	533.02	5	.10	45 ♂			
J	534.02	6	.20		53390	40 ♂	Shoulder Mag
K	.17	6	.25	170 ♂			
L	.53	2		-			
8 A	542.23	2		300 ♂			
B	.51	4	.02	-			
C	543.16	6	.35	30 ♂			
D	.33	6	.15	80 ♂			
E	.71	3		-			
F	.98	3		-			
G	545.53	4	.05	80 ♂			
H	546.50	6	.70		546.55	350 ♂	
J	.63	6	.35	20 ♂			Shoulder Mag.
K	.98	2		-			
9 A	555.09	4	.05		555.00	235 ♂	
B	.79	6	.65	25 ♂			
C	.99	3		50 ♂			
D	556.38	4	.03	-			
E	558.33	4	.02		558.20	70 ♂	
F	.64	3			558.80	200 ♂	
G	559.13	6	1.15		559.20	280 ♂	

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Page No. 3

Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
9 H	559.33	6	.25		559.20	280 γ	
J	.63	2		-			
10 A	567.68	3		250 γ			
B	568.35	6	.60	"			
C	.97	3			569.05	40 γ	
D	570.60	5	.10	"			
E	.79	3		40 γ			Shoulder Mag.
F	571.78	6	1.00		Flanks	G	
G	.89	6	.35	190 γ			
11 A	582.20	6	.50		582.10	180 γ	
B	584.40	5	.10	"			
C	.56	3		40 γ			Shoulder Mag.
D	585.40	3			585.45	70 γ	
E	.67	6	.60	350 γ			
12 A	461.80	5	.10	65			Shoulder Mag.
B	462.12	3			462.05	385 γ	
C	.93	3		"			
D	463.75	3		-			
E	465.02	1	.08	"			
13 A	475.05	1	.02	-	475.10	35 γ	Shoulder Mag.
B	.40	4	.05		475.30	400 γ	
C	476.53	2		500 γ			
D	.97	6	.18	250 γ			
E	477.34	3		150 γ			
F	.87	2			478.00	45 γ	
G	478.37	6	.25	-			
14 A	487.53	3		60 γ			Shoulder Mag.
B	.86	3			487.80	400 γ	
C	489.13	3		-			
D	.46	6	.25	245 γ			
E	.86	4	.03	150 γ			
F	490.31	4	.03		490.40	65 γ	

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Page No. 4

Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
14 G	490.83	3		-			
H	491.03	3			491.15	55 γ	
15 A	499.94	5	.10		500.00	45 γ	Shoulder Mag.
B	500.29	3			500.30	500 γ	
C	501.62	3		-			
D	.84	5	.15	-			
E	502.04	6	.25	110 γ			
F	.34	6	.10		502.40	220 γ	
G	.73	6	.40		502.80	100 γ	
H	503.50	3			503.55	40 γ	
16 A	512.23	3		-			
B	.62	3		"	512.45	500 γ	
C	513.62	4	.05	210 γ			
D	.77	5	.15	-	FLANKS	C	
E	514.03	5	.20	500 γ			
F	.39	5	.20	140 γ			Shoulder Mag.
G	.57	4	.02	-	514.65	350 γ	
H	.98	6	.20	-	Flanks	J	
J	515.06	6	.30	120 γ			
K	.76	3		40 γ			Shoulder Mag.
17 A	524.16	2		-			
B	526.32	4	.05	-			
C	.46	6	.25	-	526.60	1500 γ	
D	.70	6	.32	-	526.60	1500 γ	
E	.98	5	.12	60 γ			Shoulder Mag.
F	527.23	3		-	527.30	285 γ	
G	.76	6	.15	120 γ			
H	528.46	3		-			
J	.58	3		-	528.75	120 γ	
18 A	536.78	4	.03	190 γ			
B	537.13	2		-			
C	539.23	4	.05	-			
D	.43	6	.40	-			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
18 E	539.62	6	.35	1700 γ			
F	.94	4	.03		540.00	100 γ	
G	540.22	3			540.30	220 γ	
H	.75	5	.10	60 γ			
J	541.60	3		40 γ			Shoulder Mag.
K	.76	3			541.70	100 γ	
19 A	549.33	5	.10		Flanks	B	
B	.44	5	.05	200 γ			
C	.76	2		-			
D	550.54	2		160 γ			
E	551.80	4	.05		551.85	110 γ	
F	552.07	6	.50		Flanks	G	
G	.19	6	.55	2000 γ			
H	.29	6	.35		Flanks	G	
J	.62	3		270 γ			
K	.77	4	.05		553.85	120 γ	
L	554.40	3		40 γ			
20 A	561.93	3			Flanks	B	
B	562.03	1	.02	335 γ			
C	.38	2		-			
D	563.25	3			563.30	105 γ	
E	569.28	6	.50	600 γ			
F	.68	5	.20		Flanks	G	
G	.78	6	.55	2500 γ			
H	.94	6	.60		Flanks	G	
J	565.32	4	.05	140 γ			
K	.44	4	.10		565.50	310 γ	
21 A	573.43	2		-			
B	576.30	3			576.40	40 γ	
C	577.25	6	.75		Flanks	D	
D	.35	6	.85	1300 γ			
E	.79	6	.80		577.85	3500 γ	
F	.94	6	.55		577.85	3500 γ	
G	578.30	4	.05	185 γ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
21 H	578.53	4	.10	265 γ			
22 A	589.72	2			589.85	30 γ	Shoulder Mag.
B	590.63	6	1.20	1600 γ			
C	.78	6	1.00		Flanks	B	
D	591.15	6	.55		591.20	3500 γ	
E	.31	6	.45		591.20	3500 γ	
F	.65	5	.08	195 γ			
G	.91	3		220 γ			
H	592.42	5	.05	120 γ			Broad Mag.
J	.53	4	.05		Flanks	H	
23 A	604.33	6	.90		604.15	500 γ	Shoulder Mag
B	.56	6	1.55		604.45	2000 γ	
C	.99	6	.80		605.05	3500 γ	
D	605.17	6	.80		605.05	3500 γ	
E	.49	5	.10	500 γ			
F	.77	3		100 γ			
G	606.28	5	.15		606.15	50 γ	
H	.38	5	.13	-			
24 A	616.40	6	.40	600 γ			
B	.70	5	.15	-			
C	.94	6	.90	1600 γ			
D	617.13	6	.30	-			
E	.38	6	.75		617.45	2500 γ	
F	.58	6	.70	500 γ			Shoulder Mag
G	.85	5	.20	-			
H	618.16	4	.03	250 γ			
J	.67	5	.08		Flanks	K	
K	.77	5	.10	40 γ			
25 A	628.93	6	.45		Flanks	B	
B	629.06	6	1.10	1200 γ			
C	.34	3			629.40	25 γ	
D	.63	6	.70	700 γ			
E	.82	6	.20	-			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
25 F	630.08	6	.60	300 ɣ			Shoulder Mag.
G	.30	6	.60	3500 ɣ			
H	.54	6	.35	1000 ɣ			
J	.91	6	.20	730 ɣ			
K	631.90	4	.02		Flanks	L	
L	.49	4	.02	70 ɣ			
26 A	641.67	5	.20	-			
B	.94	6	1.00	1500 ɣ			
C	642.38	5	.10	135 ɣ			Shoulder Mag.
D	.59	5	.15	-			
E	.86	6	.50	300 ɣ			Shoulder Mag.
F	643.10	6	.95		643.15	1000 ɣ	
G	.26	6	.60	3000 ɣ			
H	.72	5	.10	700 ɣ			
J	644.23	2			644.30	30 ɣ	
27 A	654.66	5	.10	-			
B	.92	6	.62	1500 ɣ			
C	655.03	6	.45		Flanks	B	
D	.34	3		80 ɣ			
E	.58	5	.10	-			
F	.82	6	.45	500 ɣ			
G	656.12	6	.50	-			
H	.24	6	1.00		656.30	4000 ɣ	
J	.68	5	.10	700 ɣ			
28 A	666.68	4	.02	100 ɣ			Shoulder Mag.
B	666.03	6	.70		666.90	800 ɣ	
C	.13	6	.35	-			
D	.64	5	.10	-			
E	.87	6	.35		667.95	600 ɣ	
F	668.33	6	.80	3500 ɣ			
G	.73	5	.15	600 ɣ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
29 A	679.05	3			678.95	165γ	Shoulder Mag.
B	.27	3			679.40	640γ	
C	.63	3			Flanks	D	
D	.77	5	.10	15γ			
E	680.27	5	.10	-			
F	.48	6	.30		Flanks	G	
G	.58	6	.25	1100γ			
H	.87	6	.80		Flanks	J	
J	.98	6	.40	3000γ			
K	681.23	3		-			
30 A	691.45	6	.20	540γ			
B	.98	2		-			
C	692.45	4	.02	-			
D	.63	4	.10	-			
E	.92	6	.50	1000γ			
F	693.24	6	.85	2700γ			
G	.55	4	.02	-			
H	694.95	3		-			
31 A	704.07	6	.30	620γ			
B	.47	3		-			
C	705.07	4	.10	40γ			
D	.18	5	.15	-			
E	.48	6	.60	950γ			
F	.78	6	.85		705.85	2500γ	
G	706.10	4	.02	-			
H	.86	3		-			
J	707.47	4	.05		707.65	25γ	
32 A	607.82	5	.15	-			
B	608.23	5	.10		608.05	240γ	
C	.91	5	.20	30γ			Shoulder Mag
D	609.55	3			609.60	35γ	
E	610.48	5	.15	110γ			Shoulder Mag.
F	.66	6	.75		Flanks	G	
G	.74	6	.80	2000γ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
32 H	610.97	6	.95		611.10	1000γ	
J	611.23	5	.15		611.10	1000γ	
K	.42	6	.25	-			
L	.91	3			612.00	35γ	
M	612.22	6	.25	-			
N	.53	6	.45	800γ			
33 A	620.71	5	.12	-			
B	621.42	5	.10	25γ			Shoulder Mag
C	622.07	3		95γ			
D	.39	3		220γ			
E	.97	6	.20	200γ			Shoulder Mag
F	623.20	6	1.05		623.25	2500γ	
G	.30	6	.65		623.25	2500γ	
H	.51	6	1.00		623.60	500γ	Shoulder Mag.
J	.74	6	.25		623.60	500γ	Shoulder Mag.
K	.90	6	.20	-			
L	624.53	2		45γ			
M	.78	6	.20	-			
N	625.00	6	.25		625.05	700γ	
34 A	633.35	5	.10	-			
B	.76	3			633.70	200γ	
C	634.70	5	.15		634.80	70γ	Shoulder Mag.
D	.94	3			635.00	480γ	
E	635.56	6	.20	250γ			Shoulder Mag
F	.78	6	1.10	-			
G	.89	6	1.30		635.95	3500γ	
H	636.13	6	.80		636.20	1000γ	
J	.32	6	.45		636.20	1000γ	
K	.49	6	.30	-			
L	.96	3		-			
M	637.18	3			637.25	90γ	
N	.43	6	.20		637.25	90γ	
P	.58	1	.03		637.65	300γ	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
35 A	646.28	5	.15	20 ɣ			
B	.48	5	.15	-			
C	.89	4	.05	200 ɣ			
D	647.89	5	.08	-			
E	648.03	6	.40		648.10	1200 ɣ	
F	.17	4	.05		648.10	1200 ɣ	
G	.60	6	.40	270 ɣ			
H	.93	6	1.05		649.00	3000 ɣ	
J	649.06	6	.40		649.00	3000 ɣ	
K	.25	6	.30		649.30	500 ɣ	
L	.40	6	.35		649.30	500 ɣ	
M	.62	6	.20	-			
N	650.04	6	.35	125 ɣ			
P	.27	5	.05		650.40	60 ɣ	
R	.55	4	.02		Flanks	S	
S	.67	5	.05	130 ɣ			
36 A	658.86	6	.25	570 ɣ			
B	660.20	5	.10		660.25	315 ɣ	
C	.52	5	.12	250 ɣ			
D	.86	6	1.10		660.95	2500 ɣ	
E	661.00	6	.35		660.95	2500 ɣ	
F	.22	6	.25	500 ɣ			
G	.37	6	.50		Flanks	F	
H	.55	6	.25	-			
J	662.00	5	.10		662.05	260 ɣ	
K	.22	4	.02		662.05	260 ɣ	
37 A	670.73	5	.20	-			
B	.85	5	.25		670.95	750 ɣ	
C	671.22	6	.25		671.15	80 ɣ	Shoulder Mag.
D	.33	5	.15	-			
E	672.73	3		25 ɣ			Shoulder Mag.
F	673.07	6	1.00	1300 ɣ			
G	.23	6	.25		Flanks	F	
H	.43	6	.25		673.50	600 ɣ	
J	.60	6	.65		673.65	150 ɣ	Shoulder Mag.

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
37 K	673.76	6	.30		673.65	150γ	Shoulder Mag.
L	674.24	3		50γ			
M	.52	3			674.65	55γ	
N	675.00	3			674.95	40γ	
38 A	683.43	4	.05	-			
B	.71	5	.25	-			
C	.90	5	.20	740γ			
D	684.11	5	.20	-			
E	685.84	6	.70		Flanks	F	
F	.93	6	.45	1200γ			
G	686.25	6	.22		686.30	130γ	Shoulder Mag.
H	.45	6	.40	1400γ			
J	.56	6	.20		Flanks	H	
K	687.33	4	.05	20γ			
L	.78	3		25γ			
39 A	695.98	5	.10	-			
B	696.22	5	.10	-			
C	.43	6	.30	720γ			
D	.77	5	.30	65γ			Shoulder Mag.
E	698.27	6	.70		698.35	1600γ	
F	.53	4	.02	-			
G	.72	6	.25	900γ			
H	.90	6	.25	175γ			Shoulder Mag.
J	699.02	6	.20		Flanks	H	
K	.78	5	.15		699.90	100γ	
L	700.23	3		20γ			
M	.88	3		50γ			
40 A	708.36	4	.02	-			
B	.66	6	.25		708.60	110γ	
C	.93	6	.25	500γ			
D	709.28	5	.12	130γ			
E	.44	4	.02		Flanks	D	
F	710.57	6	.40		Flanks	G	
G	.70	6	.50	2150γ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
40 H	711.06	6	.25	450 ɣ			
J	.25	6	.40	500 ɣ			
K	.37	5	.15		Flanks	J	
L	.65	5	.10	-			
M	712.03	3			Flanks	N	
N	.15	3		40 ɣ			Shoulder Mag
P	.29	3			Flanks	N	
R	.49	3		175 ɣ			
S	713.15	4	.10	150 ɣ			
41 A	720.54	3		80 ɣ			
B	.84	6	.50		720.75	160 ɣ	
C	721.15	6	.55		721.20	300 ɣ	
D	.65	6	.40		721.50	175 ɣ	
E	722.28	5	.10		722.35	50 ɣ	Shoulder Mag.
F	.44	5	.10		722.35	50 ɣ	Shoulder Mag.
G	.72	6	.45	1500 ɣ			
H	.92	6	.35	185 ɣ			Shoulder Mag.
J	723.24	6	.25		723.30	740 ɣ	
K	.45	6	.35		723.50	180 ɣ	Shoulder Mag.
L	.58	5	.10		723.70	100 ɣ	Shoulder Mag.
M	.87	5	.10		723.70	100 ɣ	Shoulder Mag.
N	724.24	5	.10	-			
P	.38	3			Flanks	R	
R	.54	3		230 ɣ			
S	.67	3			Flanks	R	
T	725.35	5	.20	280 ɣ			
42 A	732.68	3		80 ɣ			
B	.84	3			732.90	35 ɣ	
C	.95	6	.30		732.90	35 ɣ	
D	733.03	6	.35	30 ɣ			
E	.13	6	.70		Flanks	D	
F	.36	5	.20	1000 ɣ			
G	.80	5	.20	350 ɣ			
H	734.35	6	.70		734.40	330 ɣ	
J	.53	6	.30	100 ɣ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
42 K	734.76	6	.75	1500γ			
L	.95	6	.45	150γ			
M	735.04	6	.35		Flanks	L	
N	.28	6	.28		735.35	600γ	
P	.49	6	.32		735.35	600γ	
R	.62	5	.20		735.70	35γ	Shoulder Mag.
S	736.31	4	.10	-			
T	.62	4	.10	300γ			
W	737.38	5	.10	300γ			
43 A	745.63	4	.05		745.70	300γ	
B	746.03	3		120γ			
C	.24	5	.20		Flanks	D	
D	.38	5	.12	650γ			
E	.77	4	.02	600γ			
F	747.43	6	.95	-			
G	.50	6	1.05		747.60	2000γ	
H	.69	6	.60		747.60	2000γ	
J	.98	6	.35	800γ			
K	748.28	6	.30	780γ			
L	.50	6	.25		748.55	40γ	Shoulder Mag.
M	.63	6	.30		748.55	40γ	Shoulder Mag.
N	749.33	3		-			
P	.45	4	.02	-			
R	.64	5	.12	360γ			
S	750.38	4	.02	190γ			
44 A	758.33	6	.85		758.40	235γ	
B	.51	4	.02		758.40	235γ	
C	.71	3		115γ			
D	.98	5	.25		759.05	200γ	
E	759.18	5	.20		759.05	200γ	
F	760.05	6	.60	-			
G	.18	6	1.15		760.25	1700γ	
H	.62	6	.40	1150γ			
J	.98	6	.20	350γ			
K	761.18	6	.20	500γ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
44 L	761.31	5	.12		Flanks	K	
M	762.13	3		-			
N	.35	6	.15	500 ♂			
45 A	771.68	6	.50		771.75	200 ♂	
B	.87	5	.08		771.75	200 ♂	
C	772.09	5	.10	50 ♂			
D	.37	5	.10	40 ♂			
E	.55	5	.10	—			
F	.73	3		50 ♂			Shoulder Mag.
G	.98	2		350 ♂			
H	773.52	6	.90		773.60	950 ♂	
J	.92	6	.50	1200 ♂			
K	774.08	6	.25		Flanks	J	
L	.30	6	.30	110 ♂			
M	.50	6	.35	1000 ♂			
N	.63	6	.25		Flanks	M	
P	.98	3		-			
R	775.45	4	.05	—			
S	.66	6	.25	560 ♂			
46 A	784.99	4	.05	-			
B	785.15	4	.05		785.20	175 ♂	
C	.37	3		-			
D	.80	5	.40	70 ♂			
E	786.14	5	.10	210 ♂			
F	.41	5	.10		786.50	130 ♂	
G	.85	6	.50		786.90	375 ♂	
H	787.16	6	.55		Flanks	J	
J	.24	6	.65	1200 ♂			
K	.40	5	.20		Flanks	J	
L	.61	5	.20	-			
M	.77	6	.40	3300 ♂			
N	.92	4	.05	-			
P	788.35	3		—			
R	.78	3		-			
S	.99	6	.45		Flanks	T	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
46 T	789.12	6	.20	1100 γ			
47 A	716.20	6	.70	1800 γ			
B	.36	5	.15	140 γ			Shoulder Mag.
C	717.41	6	.25		Flanks	C	
D	.53	6	.40	4500 γ			
E	.76	4	.05	-			
F	718.03	6	.45		Flanks	G	
G	.08	6	.40	800 γ			
H	.41	6	.45	320 γ			
J	719.08	4	.10		Flanks	K	
K	.18	4	.05	380 γ			
L	.38	5	.12	130 γ			
M	.53	3			Flanks	L	
N	720.01	3		35 γ			
48 A	727.98	6	.70	1650 γ			
B	728.14	6	.30	170 γ			Shoulder Mag.
C	729.35	6	.40	4500 γ			
D	.60	3		-			
E	.83	6	.40		Flanks	F	
F	.94	6	.42	800 γ			
G	730.23	6	.30		730.30	340 γ	
H	.95	4	.10	430 γ			
J	731.22	5	.20	200 γ			
49 A	739.85	3		-			
B	740.11	6	.50		Flanks	C	
C	.25	5	.30	2150 γ			
D	.67	3		200 γ			
E	741.48	6	.45	5000 γ			
F	.75	3		-			
G	.98	6	.40		Flanks	H	
H	742.09	6	.50	1100 γ			
J	.23	5	.20		Flanks	H	
K	.34	5	.08		742.40	90 γ	Shoulder Mag.
L	.93	3			Flanks	H	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
49 M	743.08	4	.05	375 γ			
N	.23	5	.20		743.30	70 γ	Shoulder Mag.
P	.35	4	.10		743.30	70 γ	Shoulder Mag.
50 A	753.05	5	.10	-			
B	.27	6	.23	-			
C	.47	6	.30	2200 γ			
D	.93	4	.02	135 γ			
E	754.01	4	.03		Flanks	D	
F	.76	6	.50	3700 γ			
G	755.34	6	.60	950 γ			
H	.52	6	.25		755.70	80 γ	Shoulder Mag.
J	.90	3		-			
K	756.14	4	.05		Flanks	L	
L	.27	4	.12	300 γ			
M	.42	5	.20	40 γ			Shoulder Mag.
N	.55	4	.02		Flanks	M.	
51 A	765.85	6	.25	-			
B	766.05	5	.12	-			
C	.24	6	.50		766.30	2300 γ	
D	.38	5	.08		766.30	2300 γ	
E	.73	3		60 γ			
F	767.48	6	.30		767.55	2850 γ	
G	.60	6	.50		767.55	2850 γ	
H	768.09	6	.15		Flanks	J	
J	.16	6	.60	850 γ			
K	.34	5	.20		768.50	50 γ	Shoulder Mag.
L	.60	4	.10		768.50	50 γ	Shoulder Mag.
M	.78	4	.10		768.85	450 γ	
N	.98	4	.15		768.85	450 γ	
P	769.14	4	.15	250 γ			
52 A	779.90	6	.35	-			
B	780.37	6	.30		780.35	2200 γ	
C	.44	5	.10		780.35	2200 γ	
D	781.50	5	.12	-			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
52 E	781.68	6	.40	2300γ			
F	782.09	6	.30	-			
G	.26	6	.40	380γ			Shoulder Mag.
H	.63	6	1.10	1200γ			
J	.88	5	.25	600γ			
K	783.09	5	.15	130γ			Shoulder Mag.
L	.51	3		-			
M	784.38	5	.12		784.45	650γ	
N	.57	5	.12		784.45	650γ	
53 A	792.07	6	.30	1100γ			Shoulder Mag.
B	.39	6	.20		Flanks	C	
C	.50	5	.15	1700γ			
D	.66	3		-			
E	793.64	5	.10	-			
F	.83	6	.35	2500γ			
G	794.25	6	.35	-			
H	.35	6	.20	-			
J	.52	5	.10		794.60	190γ	Shoulder Mag.
K	.78	6	.85	2000γ			
L	795.09	6	.25	-			
M	.23	5	.10	-			
54 A	806.24	3		-			
B	.68	3		400γ			
C	807.03	2		-			
D	808.42	3		-			
E	.58	3			808.75	700γ	
F	.92	3			808.75	700γ	
G	809.53	5	.10	85γ			
H	812.41	5	.20		Flanks	J	
J	.52	5	.15	690γ			
K	.72	4	.10		Flanks	L	
L	.87	4	.10	90γ			Shoulder Mag.
M	813.11	5	.15	100γ			
N	.25	4	.05		Flanks	M.	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
55 A	823.12	5	.10	-			
B	.52	4	.02	400γ			
C	.80	3		-			
D	824.76	3			824.90	120γ	
E	825.30	3		-			
F	.40	3			825.55	550γ	
G	.70	2			825.55	550γ	
H	826.32	5	.10	40γ			
J	829.18	4	.05		Flanks	K	
K	.32	3		735γ			
L	.49	4	.02		Flanks	K	Same as 54K
M	.68	3		75γ			
N	.89	6	.12	90γ			
P	830.03	4	.05		Flanks	N	
56 A	838.96	3			838.85	1000γ	
B	839.23	6	.20	-			
C	.45	3		-			
D	.57	3			839.65	600γ	
E	.70	4	.05		839.65	600γ	
F	.95	3		25γ			
G	840.75	3		-			
H	.90	3			840.95	125γ	
J	841.82	3			841.70	400γ	
K	842.26	4	.05	-			
L	.47	6	.40		Flanks	M.	
M	.62	6	.30	70γ			Broad Mag.
N	.70	6	.20		Flanks	M	
P	.82	4	.05	-			
R	845.20	4	.02	-			
S	.35	4	.05		845.40	500γ	
T	.67	5	.20	60γ			
W	846.00	5	.15	240γ			
Y	.32	3		30γ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
57 A	856.10	3		-			
B	.35	4	.10	-			
C	.56	4	.05	65γ			Shoulder Mag.
D	.85	5	.08		856.80	500γ	
E	857.10	4	.05		857.15	30γ	
F	.22	3			857.15	30γ	
G	.94	3		-			
H	858.05	3			858.10	150γ	
J	.90	3			858.75	450γ	
K	859.32	6	.25	-			
L	.56	6	.25		859.70	100γ	
M	.86	6	.25	-			
N	860.02	3		-			
P	862.10	5	.10	-			
R	.22	4	.03	-			
S	.42	6	.25	850γ			
T	.53	4	.10		Flanks	S	
W	.70	3			862.75	180γ	
Y	.81	3			862.75	180γ	
58 A	871.62	3		-			
B	.85	4	.10	-			
C	872.36	4	.05	420γ			
D	.63	5	.12	70γ			
E	.73	5	.10		Flanks	D	
F	873.43	4	.02	-			
G	.58	3			873.65	120γ	
H	874.07	3		-			
J	.28	3		580γ			
K	.73	3		-			
L	875.40	3		-			
M	877.46	4	.05		Flanks	N	
N	.58	5	.10	90γ			Shoulder Mag.
P	.82	5	.20	1100γ			
R	.94	4	.10		Flanks	P	
S	878.17	3		-			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
59 A	888.12	4	.10		887.95	170γ	
B	.30	5	.20	-			
C	.84	4	.05	400γ			
D	889.13	5	.12	55γ			Shoulder Mag
E	.21	5	.10		Flanks	D	
F	.89	5	.08	-			
G	890.05	3			890.10	90γ	
H	.47	3		-			
J	.70	3		550γ			
K	891.87	4	.05	-			
L	893.86	4	.05		Flanks	M.	
M	.98	4	.08	125γ			Shoulder Mag
N	894.25	6	.30		894.20	1400γ	
P	.46	3		-			
R	895.68	3		210γ			
60 A	904.83	4	.10		904.75	180γ	
B	905.02	4	.10	-			
C	.14	3		-			
D	.57	4	.02	350γ			
E	.77	4	.02	-			
F	.91	4	.02	-			
G	906.66	4	.02		906.80	100γ	
H	907.17	4	.05	-			
J	.40	3		500γ			
K	908.76	4	.05	40γ			
L	910.06	4	.05	-			
M	.24	2		-			
N	.50	5	.10	-			
P	.63	5	.18	-			
R	.81	6	.30		Flanks	S	
S	.90	6	.40	550γ			
T	911.14	3		-			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
61 A	921.63	4	.10	-			
B	.90	4	.10	-			
C	922.15	4	.02		Flanks	D	
D	.32	4	.03	210γ			
E	.53	4	.03	30γ			Shoulder Mag.
F	.63	6	.20	-			
G	923.52	3		140γ			
H	.87	3		-			
J	924.12	3			924.20	450γ	
K	925.55	3		80γ			
L	926.75	5	.10	-			
M	.92	3		-			
N	927.18	5	.10	-			
P	.33	6	.18		Flanks	R	
R	.45	6	.25	530γ			
S	.61	6	.50		Flanks	R	
T	.84	4	.05		927.90	50γ	
W	928.00	3			927.90	50γ	
Y	.96	6	.25	260γ			
62 A	937.59	4	.02	350γ			
B	.85	4	.08	-			
C	938.07	4	.02	-			
D	.23	4	.05	70γ			
E	.51	3		50γ			
F	.74	5	.15	-			
G	.83	5	.15	-			
H	939.59	3		-			
J	.70	3			939.75	130γ	
K	.85	3			939.75	130γ	
L	940.02	5	.05	85γ			Shoulder Mag.
M	.28	3			940.40	450γ	
N	941.69	3		100γ			
P	943.27	6	.12	-			
R	.38	6	.30		Flanks	S	
S	.53	6	.30	650γ			
T	.75	5	.30	100γ			Shoulder Mag.

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
62 W	943.97	5	.12	40 ɣ			Shoulder Mag
Y	944.16	3		-			
Z	945.07	6	1.15	220 ɣ			
63 A	959.33	5	.10	600 ɣ			
B	.43	5	.08		Flanks	A	
C	.56	4	.05	-			
D	.73	4	.05	-			
E	.89	5	.08	15 ɣ			
F	955.17	3		100 ɣ			
G	.37	6	.32		Flanks	H	
H	.46	6	.20	50 ɣ			Shoulder Mag.
J	956.23	3			956.35	35 ɣ	
K	.49	4	.02		956.35	35 ɣ	Shoulder Mag.
L	.68	4	.05	200 ɣ			Shoulder Mag.
M	.97	3		530 ɣ			
N	957.27	3		-			
P	958.39	3			958.25	125 ɣ	
R	959.77	4	.02	-			
S	.93	5	.18	-			
T	960.03	6	.25		960.15	600 ɣ	
W	.21	6	.35		960.15	600 ɣ	
Y	.43	5	.25		960.60	125 ɣ	
Z	.73	3			Flanks	AA	
AA	.85	4	.05	35 ɣ			Shoulder Mag.
BB	961.79	6	.40	220 ɣ			
64 A	972.32	5	.10		Flanks	B	
B	.42	5	.20	540 ɣ			
C	.58	5	.20		Flanks	B	
D	.75	4	.08	-			
E	.94	4	.05	-			
F	973.21	3		115 ɣ			
G	.49	5	.10		Flanks		
H	.54	5	.15	75 ɣ			Shoulder Mag.
J	974.20	4	.02	-			
K	.30	4	.08	-			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
64 L	974.53	3		-			
M	.75	3		50 ♂			Shoulder Mag.
N	975.05	3			975.95	530 ♂	
P	.35	3		-			
R	.55	3		90 ♂			Shoulder Mag.
S	976.42	3		20 ♂			Shoulder Mag
T	977.77	3		-			
W	978.05	6	.30	480 ♂			
Y	.18	6	.30		Flanks	W	
Z	.36	5	.20	250 ♂			
AA	.65	5	.18		978.55	70 ♂	Shoulder Mag
BB	.82	4	.08	170 ♂			
CC	979.42	3		40 ♂	979.30	500 ♂	
65 A	962.87	6	.15	300 ♂			
B	963.48	5	.15	115 ♂			
C	.63	4	.02		Flanks	B	
D	.76	4	.02		963.85	270 ♂	
E	.92	5	.12		963.85	270 ♂	
F	964.07	6	.45		964.15	600 ♂	
G	965.57	4	.02		965.75	65 ♂	
H	966.36	3		125 ♂			Shoulder Mag.
J	.53	2			966.60	60 ♂	Shoulder Mag.
K	.77	4	.02	-			
L	.96	3		500 ♂			
M	967.20	6	.25		967.10	75 ♂	
N	.40	6	.10		967.55	60 ♂	
P	.60	6	.25		967.55	60 ♂	
R	968.34	5	.15	35 ♂			Shoulder Mag.
S	.68	5	.13	265 ♂			
T	.97	5	.13	-			
W	969.17	5	.15	-			
Y	.27	5	.20	-			
Z	.43	5	.15	120 ♂			Shoulder Mag

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
66 A	799.00	6	.40	500 γ			
B	.62	5	.20		799.75	310 γ	
C	800.00	5	.12		799.90	60 γ	Shoulder Mag.
D	.15	5	.20		800.25	540 γ	
E	.43	3			800.25	540 γ	
F	802.70	4	.10	630 γ			
G	803.07	6	.20	100 γ			Shoulder Mag.
H	.32	4	.02	-			
J	.58	4	.02	55 γ			
K	804.32	5	.10	55 γ			Shoulder Mag.
L	.65	5	.08	360 γ			
M	.95	4	.06	-			
N	805.30	4	.02		805.15	30 γ	Shoulder Mag
67 A	814.96	6	.35	125 γ			Shoulder Mag.
B	815.08	5	.08	350 γ			
C	.66	6	.40	-			
D	.73	6	.40	-			
E	.93	3		320 γ			
F	816.16	5	.20		Flanks	G	
G	.29	6	.32	300 γ			
H	.41	5	.20		Flanks	G	
J	817.73	3			817.90	65 γ	
K	818.76	4	.10	175 γ			
L	819.15	5	.12	100 γ			
M	.40	4	.05	-			
N	.66	4	.05	20 γ			Shoulder Mag.
P	820.35	5	.10		820.30	70 γ	Shoulder Mag.
R	.68	5	.08	235 γ			
S	.85	5	.20	50 γ			Shoulder Mag.
T	821.02	5	.10		Flanks	W	
W	.14	5	.10	50 γ			
Y	.33	5	.12		821.40	40 γ	Shoulder Mag.
Z	.57	6	.22	-			
AA	.72	5	.10		821.80	670 γ	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
68 A	831.68	6	.30	350 ♂	831.50	90 ♂	
B	.82	5	.15	-			
C	832.94	5	.25		Flanks	D	
D	833.07	5	.20	25 ♂			
E	.18	5	.25		Flanks	D	
F	834.65	3		60 ♂			
G	835.58	4	.11	600 ♂			
H	.93	5	.22	100 ♂			Shoulder Mag.
J	836.03	5	.12		Flanks	H	
K	.17	5	.10	-			
L	.49	4	.05	40 ♂			Shoulder Mag.
M	837.11	4	.08		837.05	140 ♂	Shoulder Mag.
N	.43	3		175 ♂			
P	.58	6	.30		Flanks	N	
R	.72	4	.10	-			
S	.90	3		-			
T	838.08	5	.12	60 ♂			
W	.39	3			Flanks	Y	
Y	.49	3		400 ♂			
69 A	848.54	5	.12		848.40	130 ♂	
B	.68	4	.08	-			
C	849.92	6	.20	-			
D	851.05	2		-			
E	852.42	4	.12	70 ♂			Shoulder Mag.
F	.74	6	.25	530 ♂			
G	.83	6	.15		Flanks	F	
H	.97	5	.15	-			
J	853.30	5	.15	-			
K	.81	4	.05	90 ♂			Shoulder Mag.
L	.97	4	.10		Flanks	K	
M	854.26	4	.05		854.20	170 ♂	
N	.41	6	.32	65 ♂			Shoulder Mag.
P	.56	5	.12		Flanks	N	
R	.75	3		-			
S	.95	4	.10		855.05	120 ♂	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
70 A	864.63	5	.15		864.50	150γ	
B	865.97	5	.12	-			
C	867.08	4	.02	-			
D	.48	3		-			
E	868.44	4	.10		868.35	55γ	Shoulder Mag.
F	.72	6	.30	650γ			
G	.82	5	.10		Flanks	F	
H	.98	6	.12	-			
J	869.29	4	.03	-			
K	.82	3		-			
L	.96	4	.02	-			
M	870.22	4	.02	230γ			
N	.37	6	.20				
P	.55	6	.30	-			
R	.74	3		-			
S	.98	5	.08	250γ			
71 A	880.73	5	.08		880.65	190γ	
B	882.08	4	.03				
C	.23	4	.03		882.40	130γ	
D	883.14	5	.10	-			
E	.56	3		25γ			
F	884.51	4	.08		884.35	45γ	Shoulder Mag.
G	.77	6	.35	650γ			
H	884.86	6	.15		Flanks	G	
J	885.01	6	.15	-			
K	.33	4	.05	-			
L	.77	5	.10		885.65	600γ	
M	886.01	4	.02	-			
N	.23	4	.02	150γ			
P	.41	5	.10		Flanks	N	
R	.58	6	.35	-			
S	.70	5	.15	-			
T	.95	5	.10		Flanks	W	
W	887.05	5	.12	350γ			

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
72 A	897.10	4	.08		897.00	265γ	
B	898.54	4	.15		898.70	200γ	
C	.82	3			898.70	200γ	
D	899.13	2			899.05	400γ	
E	.45	6	.15				
F	.87	4	.02				
G	900.76	3			900.65	50γ	Shoulder Mag.
H	901.06	5	.12		901.00	590γ	
J	.25	6	.30	-			
K	.59	5	.05	40γ			Shoulder Mag.
L	902.02	6	.20		901.90	600γ	
M	.25	4	.02				
N	.48	4	.05	50γ			Shoulder Mag.
P	.68	5	.10	-			
R	.86	6	.30	60γ			
S	903.21	4	.05	-			
T	.30	5	.10		903.35	300γ	
W	.50	3			903.35	300γ	
73 A	914.35	3			914.25	370γ	
B	915.26	3		-			
C	.84	6	.20	-			
D	916.12	3		125γ			
E	.42	2		500γ			
F	917.20	3		-			
G	918.05	4	.10		917.90	150γ	Shoulder Mag.
H	.25	6	.25	500γ			
J	.32	6	.22		Flanks	H	
K	.48	6	.20	-			
L	.82	4	.02	80γ			Shoulder Mag.
M	919.24	5	.10	40γ			Shoulder Mag
N	.47	4	.02	500γ			
P	.83	5	.15	-			
R	.95	5	.10		Flanks	S	
S	920.08	6	.30	160γ			Shoulder Mag.
T	.34	3		-			
W	.45	4	.10		Flanks	Y	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
73 Y	920.54	6	.30	450γ			
74 A	931.21	3			931.40	500γ	
B	.83	6	.20	-			
C	932.08	4	.02	200γ			
D	.36	3		400γ			
E	933.14	3		25γ			Broad Mag.
F	.51	4	.02	-			
G	934.00	4	.08		933.85	700γ	
H	.23	6	.45		934.15	250γ	
J	.40	6	.20	-			
K	.73	5	.10	85γ			Shoulder Mag.
L	935.12	5	.12	-			
M	.37	5	.10	580γ			
N	.62	3		40γ			Shoulder Mag.
P	.74	5	.12		Flanks	N	
R	.87	5	.12	-			
S	936.00	6	.45		936.05	450γ	
T	.96	6	.55		936.55	450γ	
75 A	947.58	3		-			
B	948.43	6	.55	-			
C	.59	5	.15	20γ			Shoulder Mag.
D	.92	3		375γ			
E	949.62	3		45γ			
F	.96	3		-			
G	950.55	4	.05		950.65	200γ	
H	.70	6	.50		950.65	200γ	
J	.85	6	.40	-			
K	951.24	5	.12		951.15	80γ	
L	.62	4	.10	-			
M	.83	5	.20	930γ			
N	952.08	4	.10	90γ			Shoulder Mag.
P	.20	4	.10		Flanks	N	
R	.48	6	.50	220γ			
S	.73	3		150γ			
T	.85	6	.20		Flanks	S	

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Anomaly Number	Fiducial	Number of Channels	Channel 4 Amplitude	Direct Magnetic Correlation	Flanking Magnetic Peak		Remarks
					Location	Value	
75 W	952.98	6	.50		953.10	320 γ	

REPORT ON GROUND FOLLOW-UP

RECONNAISSANCE OF AERIAL EM ANOMALIES 29, 30 & 31

BATEMAN TWP., GROUP 4

Four days were employed from July 17-26, 1972, to hunt for and assess these anomalies with the self potential.

A recent north-south base line which we thought would be the old Norlee Red Lake base line, re-cut, led us astray on the first day. Eventually, the old Norlee base line was found and, also, anomaly 29 with an old drill set-up. The self potential anomalies were narrow and weak. Investigation at the office of the Resident Geologist disclosed that a drill hole had been put down on this anomaly in 1967 and filed for assessment purposes. The hole contained considerable talc-chlorite schist, serpentinite, chert and graphitic argillite. There was very little sulphide. The 60° hole cased through 115 feet of boulder, clay, sand and gravel.

Anomaly 30, farther to the east, is also weak, narrow, and obviously deeply overburdened. Anomaly 31 could not be reached due to very wet swamps but it lies deeper in the sediments which are not considered good targets.

A rough sketch shows our reconnaissance.

Further work is not recommended.

S. V. Burr, M.A. P. Eng.

GROUP 5

REPORT ON O'KEEFE GROUP ANOMALY #35

Twenty-one claims were staked in the north-east corner of Balmer Twp. on the basis of the Questor aerial survey. Of most interest was an isolated three - intercept anomaly (#35) south of O'Keefe Lake.

The latest Balmer Twp. map by Ferguson showed that ground E.M. surveying by Cordoba Mines in the early sixties had picked up a conductor which coincided very well with the Questor anomaly. Furthermore, a drill hole was plotted on the map close to this anomaly. Information from the Resident Geologist of O.D.M. showed that the log of this hole was incomplete - only the first twenty-five feet of core was described - of a hole which is believed to have reached a depth of 400 feet, or so. Also, plotting the hole from the log information indicated that the hole might have been spotted beyond the anomaly, and missed it.

Two days were spent in November to locate and traverse the anomaly with the E.M. 16 instrument. The end of the drill road and a cleared area containing an empty core box and what may have been sills for the drill were located, as well as a strong conductor and very strong magnetics which pulled the compass badly.

The accompanying sketch shows the results. It is suspected the anomaly is in graphetic iron formation, although sulphides may be present also. However, the drill hole undoubtedly intersected the anomalous condition, and, since it was not followed up by other holes, one can conclude there were no values of interest.

RECOMMENDATIONS

I recommend that the O'Keefe Group claims be allowed to lapse.

S. V. Burr M.A., P. Eng.

GROUP 5 - 21 unpatented claims

KRL 322748 - 322759 inclusive
KRL 322425 - 322428 inclusive
KRL 322490 - 322494 inclusive

REPORT ON GROUP 6

AERIAL ANOMALY 14, BALMER #3

BALMER TWP., RED LAKE AREA

Three maps accompany this report:

1) Reconnaissance self potential (1" - 100')
2) Ronka E.M.-16 survey (Fraser Filtration, 1" - 100')
3) Magnetometer Survey (McPhar M-800, 1" - 100')

INTRODUCTION

As a result of a Questor detailed aerial survey, an anomalous area (#14) was located and 6 claims were staked in Balmer Twp.:

Claims: KRL 322745 to 322747 inclusive
KRL 322760 to 322762 inclusive

Anomaly #14 fell in claim 322762.

In August and September three 2-man attempts were made to locate a reasonable access around the wet swamps of the area, and two days were spent with the self potential to locate the anomalies, for a total of 10 man-days.

In February, 1973, from the 12th to the 23rd, detailed (200') line cutting was carried out plus E.M.-16 and magnetometer surveys.

Line cutting - (2.6 miles approx.)	- 11 Man-days
E.M.-16 survey	- 3 Man-days
Magnetometer survey	- 4 Man-days
Miscellaneous (locating, chaining, etc.)	- 5 Man-days
Office (maps, report, etc.)	- 6½ Man-days

RESULTS

Two linear magnetic good-conductors were located which should contain some sulphides according to the self potential. These, on the basis of old nearby drill holes, are interpreted as iron formations. They cut across a basic dyke or amphibolite inferred from the old diamond drilling. It appears that the

"amphibolite" is actually coarser phases of intermediate to basic volcanics which have a more east - west trend than the inferred "dyke".

The results of the geophysics (no rock outcrops on the claim) are not promising for base metal possibilities. Gold values may accompany the iron formations, and two drill holes have been spotted on the accompanying maps. However, to date in Balmer Twp., iron formations have not proved productive and no recommendation to drill is made.

S. V. Burr, M.A. P. Eng.

March 22, 1973

REPORT ON GROUP 7

AERIAL ANOMALY 18, BALMER #4

BALMER TWP., RED LAKE AREA

Two maps accompany this report:

1) Magnetometer Survey (McPhar M-800, 1" - 100')
2) Ronka EM-16 Survey (Fraser Filtration, 1" - 100')

INTRODUCTION

As a result of a Questor detailed aerial survey, an anomalous area (#18) was located, and 15 claims were staked in Balmer Twp.:

Claims: KRL 322876 to 322890 inclusive.

Anomaly #18 fell in and near claims 322881 and 322882.

From February 12, at intervals to March 16, line cutting and surveying were carried out.

Line cutting (3.4 miles approx.)	- 11	Man-Days
EM-16 Survey	- 4	Man-Days
Magnetometer Survey	- 4½	Man-Days
Miscellaneous (Locating, Chaining)	- 4½	Man-Days
Office (Maps, report, etc.)	- 11	Man-Days

RESULTS

One broad magnetic band is indicated containing a much narrower, weak EM-16 conductive zone, despite the strong 6 channel aerial intercepts.

The results suggest an iron formation, and sediments are known to occur on strike to the west and east. The anomaly does not appear promising for

base metals. Gold values may occur, but a drill hole on the adjoining Dorion claim to the west, in similar formations, yielded no values.

No drilling is recommended at this time.

S. V. Burr, M.A. P.Eng.

March 23, 1973

REPORT ON GROUP 8

AERIAL ANOMAL #37

CLICKER GOLD MINES LIMITED

BALMER TWP., RED LAKE AREA

Two maps accompany this report:

1) Filtered E.M.-16 Survey (Ronka, 1" - 100')
2) Partial Magnetometer Survey (McPhar M-800, 1" - 100')

INTRODUCTION

As a result of a Questor detailed aerial survey, an anomalous area (#37) was located in the north-west part of the Clicker property in patented claims KRL 21115 and 21114.

It is apparent in the Questor report that the interpreter was a little dubious about the trend of the intercepts, which were picked up on north-south and east-west flights. The known strike of the underlying volcanics is N30°W approximately. The intercepts suggested as east-west trend, and for this reason, the isolated anomaly was of interest.

From February 20 to March 25, at intervals, the property was located; line cutting, a Ronka E.M.-16 survey and a partial magnetometer survey were carried out before break-up conditions forced suspension.

Line cutting (5.1 miles approx.)	- 17 Man-Days
Locating	- 4 Man-Days
E.M.-16 survey	- 5 Man-Days
Magnetometer survey	- 2 Man-Days
Office (Maps, report, etc.)	- 6 Man-Days

RESULTS

For the first time in the flown area, we failed to pick up a definite anomalous condition on the western Questor intercepts, although the eastern section showed an anomalous condition trending approximately N30°W, suggesting good conducting sedimentary interbeds.

By chance, our lines extended far enough to the south to pick up an east-north-east anomaly (not indicated by the aerial work) and a stronger anomaly at the north-eastern part of the surveyed area (also not indicated by air).

An old 1946 magnetometer survey of the Clicker claims used here in lieu of our own more detailed but incomplete magnetometer survey, shows the N30°W trends, and also a weakly-expressed ENE trend corresponding closely with the southern anomaly "A".

CONCLUSIONS

Further exploration is warranted on this area of Clicker. At date of writing, access to the claims is too time-consuming and difficult, but it is believed that the freshly-cut north township line of Balmer will provide access after break-up by Terra jet, and much of the interesting section is swamp-free so that self potential methods may be used.

S. V. Burr, M.A. P.Eng.

March 27, 1973

REPORT ON REDCON "CORE SHACK" ANOMALY

(AERIAL ANOMALY #20)

SUMMARY

The detailed surveying of the unexposed "Core Shack" Anomaly has indicated several small heavy sulphide zones, and a large area of disseminated mineralization in a domal structure. Five drill holes are proposed as a minimum test, for a total of 2,000 feet. If valuable metals are present, there is a possibility of a low-grade open pit or an underground high-grade situation. Whether or not copper, nickel, zinc, etc., are present in economic amounts, some gold values can be expected.

INTRODUCTION

Reconnaissance ground follow-up with the self potential located the cause of Anomaly 20 as an extensive and strong anomalous area. The Ronka EM-15 indicated areas of heavy sulphides corresponding with stronger peaks of the self potential. There are no surface outcrops, although there are drill hole sections to the S. E. and N. W.

Lines were laid out and cut to cover the anomalous area. A 2,000 foot base line was run N65° - 66°W (astronomic), with grid lines at 200 foot intervals normal to the base line, covering a width of 1,200 feet. Surveys were carried out along these lines with a McPhar M-700 magnetometer, a Ronka EM-16, a Sharpe self potential, and a Ronka EM-15.

The complexity of the structure necessitated even greater detailing with the magnetometer and the self potential but eventually a picture has emerged, and five diamond drill targets have been located.

Although five heavy sulphide zones of limited lengths and widths are indicated by the self potential and Ronka EM-15, the Ronka EM-16 results suggest that, at depth, some of the zones may have greater lengths, or, actually join up. It is planned to cover all the anomalous zones with the new McPhar V.H.E.M. instrument to test these depth possibilities, prior to drilling.

GEOPHYSICAL METHODS

Four maps accompany this report: (1) the EM-16 results which have been "filtered" by the "Fraser Filtration" calculations to allow contouring, (2) the magnetometer survey, (3) the self potential survey, and (4) a topographic map showing the inferred structure and the Ronka EM-15 indications, and the recommended drill sites.

The four geophysical methods have each, in its own way, contributed to the information. Since the final analysis is a combination of all the surveys, the individual methods with their good points, and their limitations, will be reviewed briefly.

(1) Ronka EM-16 - This method penetrates as deeply as any electrical method, to detect good conductors in the rock due to heavy sulphides or graphite. However, its extreme

sensitivity makes it prone to detecting good conductors in the overburden, or sub-surface topographic valleys, etc. Unfortunately, sub-surface irregularities below the overburden can produce "anomalies" similar to those caused by massive sulphide deposits.

(2) Magnetic - This method is extremely sensitive to rocks containing no magnetic minerals, rocks containing a slight amount, a little more, and a little more, up to heavy iron formations. It is an excellent geophysical method to trace geological formations under the overburden, and, generally, except for detecting iron formations, which can be detected by compass or dip needle just as easily, this is its main geophysical contribution. However, over heavy magnetic pyrrhotite, the magnetometer shows a tendency to switch from strong positive to strong negative readings.

(3) Self Potential - This method reacts only to sulphides or graphite in the underlying rock. Wet clay horizons in the overburden, sub-surface topographic irregularities, or wet faults or shear zones in the rock, do not produce self potential anomalies. If graphite is the cause of the anomaly, the self potential response is very strong and/or very sharp, at the peak, and, in 95% of the cases, it can be suspected. If sulphides cause the anomaly, the readings are under 500 milivolts (½ volt) and, depending on the sharp or smooth responses at the peak, one can estimate the depth of overburden over the anomaly within a few feet. However, like most other electrical methods, the self potential can not determine whether there are massive sulphides attending a graphite anomaly, or not. The graphite anomaly over-shadows any more weakly anomalous sulphides. Another limitation of the self potential is - but, in the case of disseminated sulphide deposits, such as porphyry copper, or even mineralized veins, this is a unique quality - one can not determine whether a self potential sulphide anomaly is due to a heavy sulphide good conducting zone, or a weakly disseminated oxidizing sulphide zone. A 30 - 50 foot wide massive pyrrhotite zone at surface will show a similar anomaly to a 2% disseminated oxidizing sulphide zone at, or near, surface. Another problem with the self potential method in the glacial areas of Canada, at least, is its tendency to conform to the topography (influenced by the acidity of the soil) so that an anomaly can be distorted in shape suggesting a different strike or dip, or plunge.

(4) EM-15 - This little instrument was a happy accident - it's the only way I can describe it - and even the inventor, Weino Ronka, does not appear to recognize its significance, despite my presenting a paper at the '71 Prospector's Convention describing its unique contribution to geophysical prospecting. The instrument, within its limited depth penetration, will detect only heavy sulphides. It ignores graphite. This little 2½ lb. "carpenter's level" has, according to Ronka, a depth penetration of 30 feet. Actually, by my own field experience, it penetrates clay to, perhaps, 10 feet, sand to 20 feet, and solid, massive, non-conducting rock, to 25-50 feet. It reacts only to heavy sulphides. "Heavy" is an ambiguous term, admittedly, but, from my experience, I would say, depending on the inter-locking arrangement of the sulphides, this would mean minimums of 10% pyrrhotite (the most conducting of sulphides) to 30% pyrite. As the overburden increases, so the amount of sulphide must increase in order to impress the instrument into a reaction.

In the case of the various zones in the Core Shack area, where the overburden must be 10 feet deep, or more, the sulphides should be close to massive in order to make the instrument react so noticeably.

INFERRED STRUCTURE

Before commenting on individual anomalies, it should be pointed out that the general anomalous area lies in a very complicated structure. The "Holbrooke Anticline" was postulated after the 1953 cross-sectional drilling campaign and was not changed by the Rio Tinto drilling in 1959 - 1960. The effect of this N.W. - S.E. anticline is indicated by the magnetic, EM-16 and self potential surveys.

The eastern portion of the Red Lake camp, particularly, is complicated by at least three periods of folding: the original E-W mountain folding, a strong N.W. - S.E. cross-folding, and a final, rather weak, N.E. - S.W. folding. This third folding has produced pronounced changes in plunge along the axes of the N.W. - S.E. folds - as evident at Dickenson Mines. The writer, on the basis of the detailed aeromagnetic map by Questor, has postulated a N.E. - S.W. fold which passes under the north-west part of Balmer Lake (a structure which was once considered a fault by E.O. Chisholm - "Geology of Balmer Township" - Vol. LX, Part X, 1951, O.D.M.) and across Redcon in the

area of the Core Shack Anomaly. The effect of this fold is indicated by the EM-16, magnetic and self potential survey.

A tight synclinal fold, the "Core Shack Syncline" paralleling the Holbrooke Anticline, is clearly outlined by the EM-16 and magnetic surveys, and the self potential shows the nose of the fold.

Finally, a fourth structural direction - an E. - W. direction - is indicated by the self potential and EM-16 results, and, locally, by the EM-15. This is believed to be a direction of fracturing,and two of the sulphide anomalies, "A" and "B", have this strike. It is interesting to note that the gold intersections in old drill holes P-1 and P-3 (see Map 4), if they represent the same mineralized zone, appear to have an E. - W. strike, and that the prominent E. - W. bulge in the self potential contours - "Apparent E. - W. Trend" is striking for the gold intersections in claim 20900, some 1400 feet farther west. In the drill holes, 9, 11, 12 and 13, which located the gold values, the logs refer to "moderate and heavy" sulphides - pyrite, pyrrhotite, minor chalcopyrite and arsenopyrite. It is tempting to postulate that this E. W. trend in the self potential is an expression of a mineralized fracture zone.

In summary, then, the anomalous area appears to lie on a domal structure with mineralized fracturing which may be controlled by the axes of the folding, by rock contacts, and by E. - W. "breaks". This structural condition is ideal for metal concentrations. All geophysical indications suggest steep dips to the south or south-west.

ANOMALIES

"A"- an east-west striking zone at least 225 feet in length, this anomaly cuts across the axis of the "Core Shack Syncline". The EM-15 indicates an 18' - 20' width of heavy sulphides. The magnetic detailing shows strong positive and negative readings indicating pyrrhotite. The EM-16 produces a distinct but relatively weak response, and, although this anomaly lies within the extensive self potential anomaly, it is not outlined clearly, suggesting that the sulphides may weaken at depth. Estimated overburden depth: 10' - 20'.

"B"- another east-west striking zone at least 175' in length. At its western end, a width of 45' of sulphides is indicated by the EM-15, narrowing to 25' to the

east. The magnetics show some deflection as they follow the formations across this anomaly, but there is no strong response so that pyrrhotite may not be predominant in this zone. The EM-16 produces a very strong response over this break and extends it for another 200', or so, to the east, suggesting that it lengthens, and, perhaps, strengthens at depth. The self potential shows a strong response at the western end of the zone, but does not indicate the eastern extension, suggesting a very sharp drop off of the sub-surface rock to the east. Estimated overburden depth (at west end): 5' - 10'.

"C"- The EM-15 suggests an irregular oval shape to the heavy sulphides of some 55' by 80'. The magnetics show strong positives and negatives, indicating pyrrhotite, and a general strike paralleling the "Core Shack Syncline". The EM-16, perhaps because it lacks the detail of the other methods, suggests that "C" may link up with "B" and "D" at depth. The strong self potential shows a "boomerang" shape which is probably indicating sub-surface topography. Estimated depth of overburden: 5' - 10'.

"D"- This zone has a definite strike, as attested by all methods, which either parallels the axes of the N.W. - S.E. folding or the strike of the formations. It extends for at least 175' and the EM-15 indicates a 60' width of heavy sulphides. The magnetics are strongly positive and negative, indicating pyrrhotite is present. The EM-16 shows a very strong response and the self potential is strong indicating shallow overburden. Estimated overburden depth: 10'.

"E"- The EM-15 response on this anomaly is definite, but much weaker than the other four anomalies. Coupled with the weaker self potential readings, this suggests that the overburden is deeper here. Nevertheless, there appears to be a minimum width of some 50' of sulphides and a length approaching 175'. The area is somewhat magnetic but there are no strong readings to indicate a predominance of pyrrhotite. However, there is a suggestion of a plunge eastward, and the EM-16 appears to pick up the zone farther east adding another 150' extension. All the methods, except the self potential, indicate a N65^{o}W strike, suggesting the zone is following the folded formations. Estimated overburden depth: 20' - 30'.

"F"- This zone is indicated by the self potential, and, very weakly, by the EM-16 - apparently down dip to south-west. It is believed to represent disseminated oxidizing sulphides with, perhaps, some narrow heavier zones at depth. Hole P-3, which collared in this anomaly picked up "fair" pyrite and slight pyrrhotite for 8½ feet near the collar of the hole. The magnetics do not indicate any concentration of pyrrhotite and the EM-15 did not respond. This is not considered a drill target at this time.

"G"- This weak self potential anomaly probably follows the formations. The strong magnetics indicate some pyrrhotite, but the EM-16 and the EM-15 do not respond, indicating there is no strong concentration. This is not considered as a drill target at this time.

"H" & "J"-are EM-16 anomalies which are not indicated by the self potential, the EM-15, or the magnetometer. These will be checked by the V.H.E.M., but, at the moment, they are considered doubtful.

In summary, five individual anomalies containing heavy sulphides, have been selected as drill targets. Because of the relatively small size of these sulphide zones, an open pit situation is not anticipated, but, if copper, nickel or zinc are present, it is possible that these anomalies could represent high-grade shoots suitable for underground mining. However, because of the geological environment, and the gold indications found in the old cross-sectional drilligg to the west and north-west, it will be surprising if gold values are not obtained.

Furthermore, the large self potential anomaly which encompasses the four individual zones, "A", "B", "C", and "D", and covers some thousand feet of the "Core Shack Syncline" where it is "domed" by the N.E. - S.W. regional anticline, suggests that mineralization, at least in disseminated form, is widespread. If this should contain valuable metals, a possibility of an open pit should not be ruled out.

RECOMMENDATIONS

Five drill holes are proposed to test the anomalies "A", "B", "C", "D" and "E", and these holes have been spotted on Map 4. It is considered that a minimum of 2,000 feet of drilling is needed to carry out this program, at an estimated cost of $20,000.00, including supervision, core boxes and assaying.

S.V. Burr

S.V. Burr, M.A. P.Eng.,
August 15, 1972.

63.3143

DICKENSON MINES LIMITED

25 ADELAIDE STREET
TORONTO

TELEPHON

900

July 5, 1972

RL-14

The Honourable Leo Bernier,
Minister, Department of Mines,
Room 1324, Whitney Block,
Queen's Park,
Toronto, Ontario.

Dear Sirs:

Dickenson Mines Limited wishes to apply for Exploration Assistance for lands in Balmer Township, and to a lesser extent in Bateman, Dome and McDonough Townships, Red Lake area.

The lands are held by various Companies with whom Dickenson has entered into an agreement, copies of which are attached hereto, to explore certain areas of the respective properties. The companies involved, with respective holdings, are:

Dickenson Mines Limited

5 Leased claims in Balmer Township (Group 1:)

KRL 38903, 38904, 38905, 38906, 38907.

11 Patented claims in Dome Township (Group 2:)

KRL 19656, 19657, 19658, 19659, 19660, 19661, 19662, 19663, 19664, 19703 & 19704.

31 Patented claims in Balmer Township (Group 3:)

KRL 19502, 19503, 19504, 19505, 19506, 19507, 19508, 19509, 19510, 19514, 19643, 19644, 19645, 19646, 19647, 19493, 19494, 19495, 19496, 19497, 19498, 19499, 19500, 19501, 19511, 19512, 19513, 19693, 19694, 19695, 23105.

15 Unpatented claims in Bateman Township (Group 4:)

KRL 322409, 322410, 322411, 322412, 322413, 322414, 322415, 322416, 322417, 322418, 322419, 322420, 322421, 322422, 322423.

6 Unpatented claims in Balmer Township - Group 6:

KRL 322760, 322761, 322762, 322745, 322746, 322747.

15 Unpatented claims in Balmer Township - Group 7:

KRL 322876, 322877, 322878, 322879, 322880, 322881, 322882, 322883, 322884, 322885, 322886, 322887, 322888, 322889, 322890.

5 Unpatented claims in Balmer Township - Group 7a:

KRL 50454, 50455, 50456, 50457 and 50458

Clicker Red Lake Mines Limited

17 Patented claims in Balmer Township - Group 8:

KRL 21099, 21100, 21101, 21102, 21103, 21104, 21105, 21106, 21107, 21108, 21109, 21110, 21111, 21112, 21113, 21114, 21115.

Commander Red Lake Mines Limited

16 Patented Claims in McDonough and Dome Townships - Group 9:

KRL 18246, 18247, 18248, 18249, 18250, 18251, 18252, 18253, 18254, 18255, 18256, 18257, 18258, 18259, 27981, 27982.

Consolidated Brewis Minerals Limited

14 Patented claims in Balmer Township: Group 10:

KRL 19689, 19690, 19691, 19692, 19696, 19697, 19698 19699, 19700, 19701, 19702, 20141, 20142, 20143.

Dorion Red Lake Mines Limited

11 Patented claims in Balmer Township - Group 11:

KRL 20862, 20863, 20864, 20865, 20866, 20867, 20868, 20869, 20870, 20871, 20872.

Duchesne Red Lake Mines Limited

23 Patented claims in Bateman Township - Group 12:

KRL 11036, 19525, 19526, 19527, 19528, 19529, 19530, 19531, 19532, 19533, 19534, 19535, 18087, 18088, 18089, 18090, 18091, 21020, 21021.

KRL 258, 259, 260 and 261.

Inore Gold Mines Limited

19 Patented claims in Bateman and McDonough Townships - Group 13:

Bateman - KRL 2753, 2754, 2755, 2756, 2757, 2760, 2770.
McDonough - KRL 2751, 2764, 2765, 2766, 2769, 2772.
Bateman and McDonough - KRL 2752, 2758, 2759, 2767, 2768, 2771.

Abino Gold Mines Limited

19 Patented claims in Balmer, Bateman, Dome and McDonough Townships - Group 14:

Balmer - KRL 17790, 17791, 17793, 17794, 17795, 17796, 17797, 17800, 18034 and 18035.
Bateman - KRL 18036, 18037, 18038, 18039 and 19709.
Balmer and Bateman - KRL 18033 and 17792.
Balmer and Dome - KRL 17789.
Balmer, Bateman, Dome & McDonough - KRL 18032.

Redcon Gold Mines Limited

43 Patented claims in Balmer Township - Group 15:

KRL 20888, 20889, 20890, 20891, 20892, 20893, 20894, 20895, 20896, 20897, 20898, 20899, 20900, 20901, 20902, 20903, 20904, 20905, 20906, 20907, 20908, 20909, 20910, 20911, 20912, 20913, 20914, 20915, 20916, 20917, 20918, 20919, 21550, 22233, 22234, 22235, 22236, 22237, 22238, 22239, 22240, 22241 22242.

Craibbe-Fletcher Gold Mines Limited

14 Patented claims in Dome Township - Group 16:

KRL 17956, 17957, 17958, 17959, 18327, 18328, 18329, 18330, 18331, 18332, 18333, 18334, 18335, 18336.

Robin Red Lake Mines Limited

12 Patented claims in Balmer Township - Group 17:

KRL 20779, 20780, 20781, 20782, 20783, 20793, 20794, 20795, 20796, 20797, 20798, 20799.

Laddie Gold Mines Limited

19 Patented claims in Balmer Township - Group 18:

KRL 19973, 19974, 19975, 19976, 19977, 19978, 19979, 19980, 19981, 21237, 21238, 21239, 21286, 21287, 21288, 21289, 21290, 21291, 21292.

An airborne E.M. and Magnetic survey has been completed by Questor Surveys Limited, covering some forty square miles, an area that would include the above properties. Survey results warrant further work in the form of ground check work in designated areas; stripping and/or diamond drilling would naturally follow where considered justified.

An estimated cost of the above work:

1.	Ground check work, including line cutting, geophysics, prospecting, and supervision - 4 months @ $4,000.00 ----------------------	$16,000.00
2.	A possible 8,000 feet of diamond drilling @ $10.00 per foot -------------------------	80,000.00
		$96,000.00

A map showing the location of the respectively numbered groups is attached hereto.

Yours very truly,

DICKENSON MINES LIMITED

[signature]

A. W. White
President.

AWW/g
Enclosures

Claims for Groups 5 secured verbally by Mr Gullet from Pete Bonner. July 11/72

63.3143

LADDIE GOLD MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

RL-14

Gentlemen:

Laddie Gold Mines Limited owns the following mining claims in Balmer Township, Province of Ontario, hereinafter referred to as "the mining property", 19 Patented claims numbered KRL 19973, 19974, 19975, 19976, 19977, 19978, 19979, 19980, 19981, 21237, 21238, 21239, 21286, 21287, 21288, 21289, 21290, 21291, 21292.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate Seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,

LADDIE GOLD MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26,1972

ROBIN RED LAKE MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Robin Red Lake Mines Limited owns the following mining claims in Balmer Township, Province of Ontario, hereinafter referred to as "the mining property", 12 Patented claims numbered KRL 20779, 20780, 20781, 20782, 20783, 20793, 20794, 20795, 20796, 20797, 20798, 20799.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate Seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,

ROBIN RED LAKE MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

CRAIBBE-FLETCHER GOLD MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto, Ontario

Gentlemen:

Craibbe-Fletcher Gold Mines Limited owns the following mining claims in Dome Township, Province of Ontario, hereinafter referred to as "the mining property", 14 Patented claims numbered KRL 17956, 17957, 17958, 17959, 18327, 18228, 18329, 18330, 18331, 18332, 18333, 18334, 18335, 18336.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,
CRAIBBE-FLETCHER GOLD MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

REDCON GOLD MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Redcon Gold Mines Limited owns the following mining claims in Balmer Township, Province of Ontario, hereinafter referred to as "the mining property", 43 Patented claims numbered KRL 20888, 20889, 20890, 20891, 20892, 20893, 20894, 20895, 20896, 20897, 20898, 20899, 20900, 20901, 20902, 20903, 20904, 20905, 20906, 20907, 20908, 20909, 20910, 20911, 20912, 20913, 20914, 20915, 20916, 20917, 20918, 20919, 21550, 22233, 22234, 22235, 22236, 22237, 22238, 22239, 22240, 22241 and 22242.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,

REDCON GOLD MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

ABINO GOLD MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Abino Gold Mines Limited owns the following mining claims situated in Balmer, Bateman, Dome and McDonough Townships, Province of Ontario, hereinafter referred to as "the mining property", 19 Patented claims numbered KRL 17790, 17791, 17793, 17794, 17795, 17796, 17797, 17800, 18034 and 18035 in Balmer Township; KRL 18036, 18037, 18038, 18039 and 19709 in Bateman Township; KRL 18033 and 17792 in Balmer and Bateman Townships; KRL 17789 in Balmer and Dome Townships and KRL 18032 in Balmer, Bateman, Dome and McDonough Townships.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,
ABINO GOLD MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

INORE GOLD MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Inore Gold Mines Limited owns the following mining claims situated in Bateman and McDonough Townships, Province of Ontario, hereinafter referred to as "the mining property", 19 Patented claims numbered KRL 2753, 2754, 2755, 2756, 2757, 2760, 2770 in Bateman Township; KRL 2751, 2764, 2765, 2766, 2769, 2772 in McDonough Township and KRL 2752, 2758, 2759, 2767, 2768, 2771 in Bateman and McDonough Townships.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,

INORE GOLD MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

DUCHESNE RED LAKE MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Duchesne Red Lake Mines Limited owns the following mining claims situated in Bateman Township, Province of Ontario, hereinafter referred to as "the mining property", 23 Patented claims numbered KRL 11036, 19525, 19526, 19527, 19528, 19529, 19530, 19531, 19532, 19533, 19534, 19535, 18087, 18088, 18089, 18090, 18091, 21020, 21021 and KRL 258, 259, 260 and 261.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,
DUCHESNE RED LAKE MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

DORION RED LAKE MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Dorion Red Lake Mines Limited owns the following mining claims situated in Balmer Township, Province of Ontario, hereinafter referred to as "the mining property", 11 Patented claims numbered KRL 20862, 20863, 20864, 20865, 20866, 20867, 20868, 20869, 20870, 20871, 20872.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,

DORION RED LAKE MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972.

CONSOLIDATED BREWIS MINERALS LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Consolidated Brewis Minerals Limited owns the following mining claims situated in Balmer Township, Province of Ontario, hereinafter referred to as "the mining property", 14 Patented claims numbered KRL 19689, 19690, 19691, 19692, 19696, 19697, 19698, 19699, 19700, 19701, 19702, 20141, 20142, 20143.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,
CONSOLIDATED BREWIS MINERALS LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

COMMANDER RED LAKE MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Commander Red Lake Mines Limited owns the following mining claims situated in McDonough and Dome Townships, Province of Ontario, hereinafter referred to as "the mining property", 16 Patented claims numbered KRL 18246, 18247, 18248, 18249, 18250, 18251, 18253, 18254, 18255, 18256, 18257, 18258, 18259, 27981, 27982.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,
COMMANDER RED LAKE MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972

CLICKER RED LAKE MINES LIMITED
Toronto - Ontario

May 26, 1972

Dickenson Mines Limited
416 - 25 Adelaide St. W.
Toronto 1, Ontario

Gentlemen:

Clicker Red Lake Mines Limited owns the following mining claims situated in Balmer Township, Province of Ontario, hereinafter referred to as "the mining property", 17 patented claims numbered KRL 21099, 21100, 21101, 21102, 21103, 21104, 21105, 21106, 21107, 21108, 21109, 21110, 21111, 21112, 21113, 21114, 21115.

The mining property merits further exploration, and the Company is desirous of having a program of exploration carried out on it.

The Company hereby offers to permit Dickenson Mines Limited (Dickenson) to enter upon and perform a program of exploration of the mining property on the following terms and conditions:

(a) The nature and the extent of the exploration program are to be determined by Dickenson.

(b) All costs related to the performance of the exploration are to be borne and paid for by Dickenson, and the Company will incur no liability in respect thereof.

(c) If, on or before December 31, 1973, Dickenson should so request, the Company will issue shares in its capital to Dickenson in quantities sufficient to equal, in amount, the expenditures on the exploration of the mining property when the shares so issued are priced as mutually agreed upon by Dickenson and the Company.

(d) The Company agrees that Dickenson will have the right to deduct its expenditures on the mining property from its income when determining its income subject to Canadian Income Tax.

Confirmation of Dickenson's acceptance of this offer, indicated by the signing of this letter in the space provided below along with the affixing of its Corporate seal, and the signature of the Company and the affixing of its Corporate seal, shall constitute a contract binding on Dickenson, and the Company.

Yours very truly,

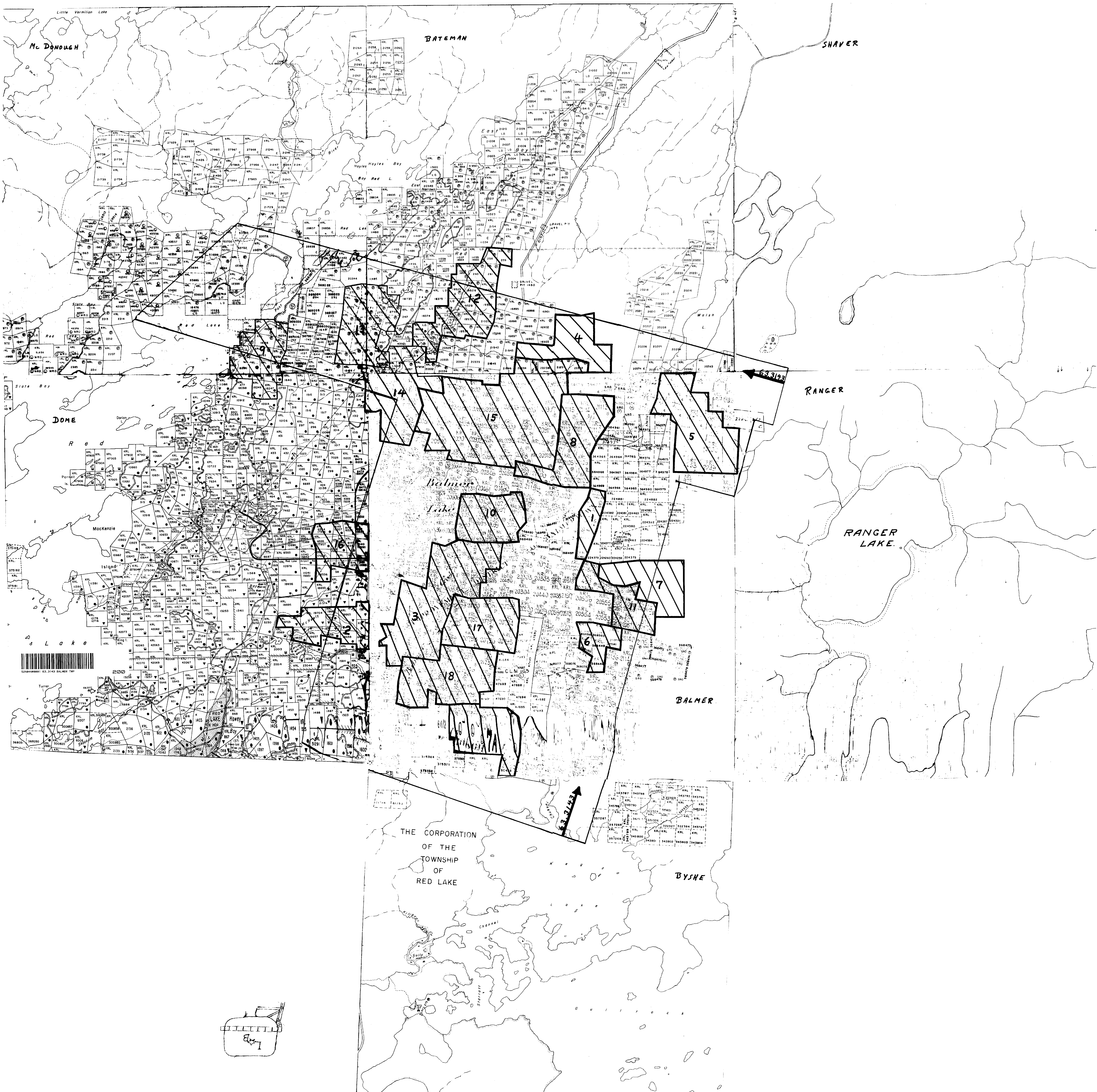
CLICKER RED LAKE MINES LIMITED

We hereby accept the above offer:

DICKENSON MINES LIMITED

Toronto, Ontario

Dated: May 26, 1972



Little Vermilion Lake
McDONOUGH
BATEMAN
SHAVER
DOME
RANGER
RANGER LAKE.
Balmer Lake
BALMER
63.3143
THE CORPORATION
OF THE
TOWNSHIP
OF
RED LAKE
BYSHE

BATEMAN TWP.

BALMER TWP.

COCHENOUR OPTION

INCO

CON.

BRODIE

R.L.

INTER-PROV. DREDGING

McFINLEY

DUCHESNE R.L.

Survey

Walsh L.

LEEMAC R.L.

Limit

DICKENSON

Lake

COMMANDER R.L.

AIRMAR R.L.

INORE G.M.

13

12

4

9

ABALARD G.M.

14

ABINO G.M. DEEBANK (VIOLAMAC) OPTION

KAYMAC G.M.

15

REDCON GOLD MINES

8

CLICKER RED LAKE

5

DICKENSON

MARBOY MINES

COCHE-NOUR

KAY-MAC

CONS. MARCUS (COCHENOUR OPTION)

COCHENOUR WILLANS G.M.

H.G. YOUNG Balmer Lake

MINES

10

DICKENSON-CONS. BREWIS

LENNIE R.L.

DICKENSON

CAMPBELL RED LAKE

ANNCO

WILMAR AIRPORT

CRAIBBE-FLETCHER G.M.

16

Survey Limit

GOLD-RAY

ROAD

3

DICKENSON MINES

BALMERTOWN

ALEXANDER RED L.

DORION

DICKENSON

7

MARTIN-McNEELY

FOLLANSBEE R.L.

LASSIE R.L.

17

ROBIN RED LAKE

RED LAKE

11

DICKENSON ESTATE

2

CABLE MINES & OILS

LOISAN R.L.

HEADWAY R.L.

LADDIE G.M.

18

DURHAM & McEWEN

DICKEN-SON

6

WALLER RED LAKE

McMANUS R.L.

CHUKUNI GOLD MINES

FALC

LEWIS R.L.

COIN LAKE

LDS

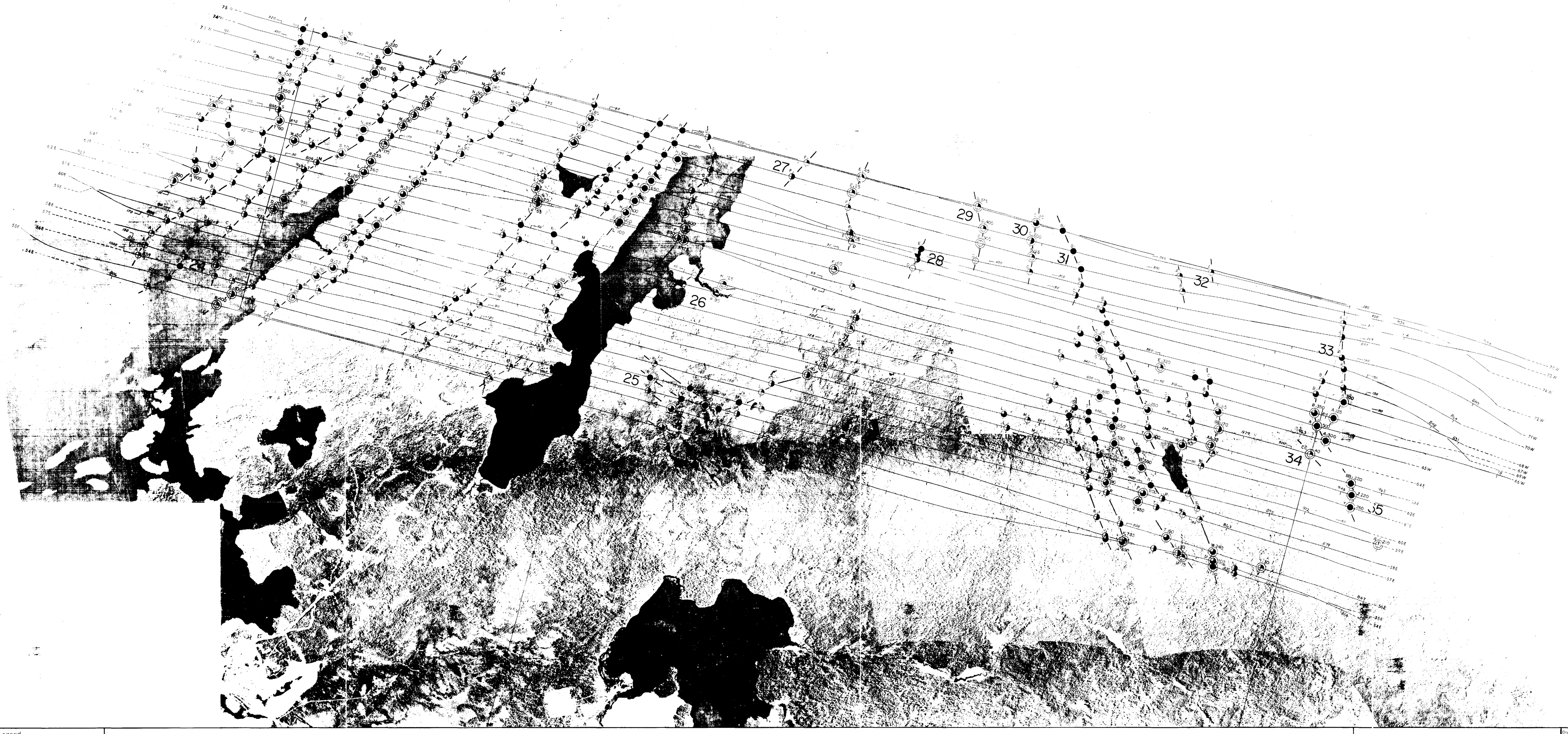
DICKENSON

7a

Chukuni River

PETERSON RED

DICKENSON MINES LIMITED
BALMER TOWNSHIP,
RED LAKE AREA.
scale: 1" = ¼ mile - June '72



Legend

- 6 Channel Anomaly
- 5 Channel Anomaly
- 4 Channel Anomaly
- 3 Channel Anomaly
- 2 Channel Anomaly
- 1 Channel Anomaly
- 20 Direct Magnetic Correlation
- MPSC Flanking Magnetic Correlation
- Limits of Conductive Overburden

220

QUESTOR SURVEYS LIMITED

Airborne Mk V Input Survey

BALMER LAKE AREA

Scale—1 : 320 feet

Drawn By

Dates Flown

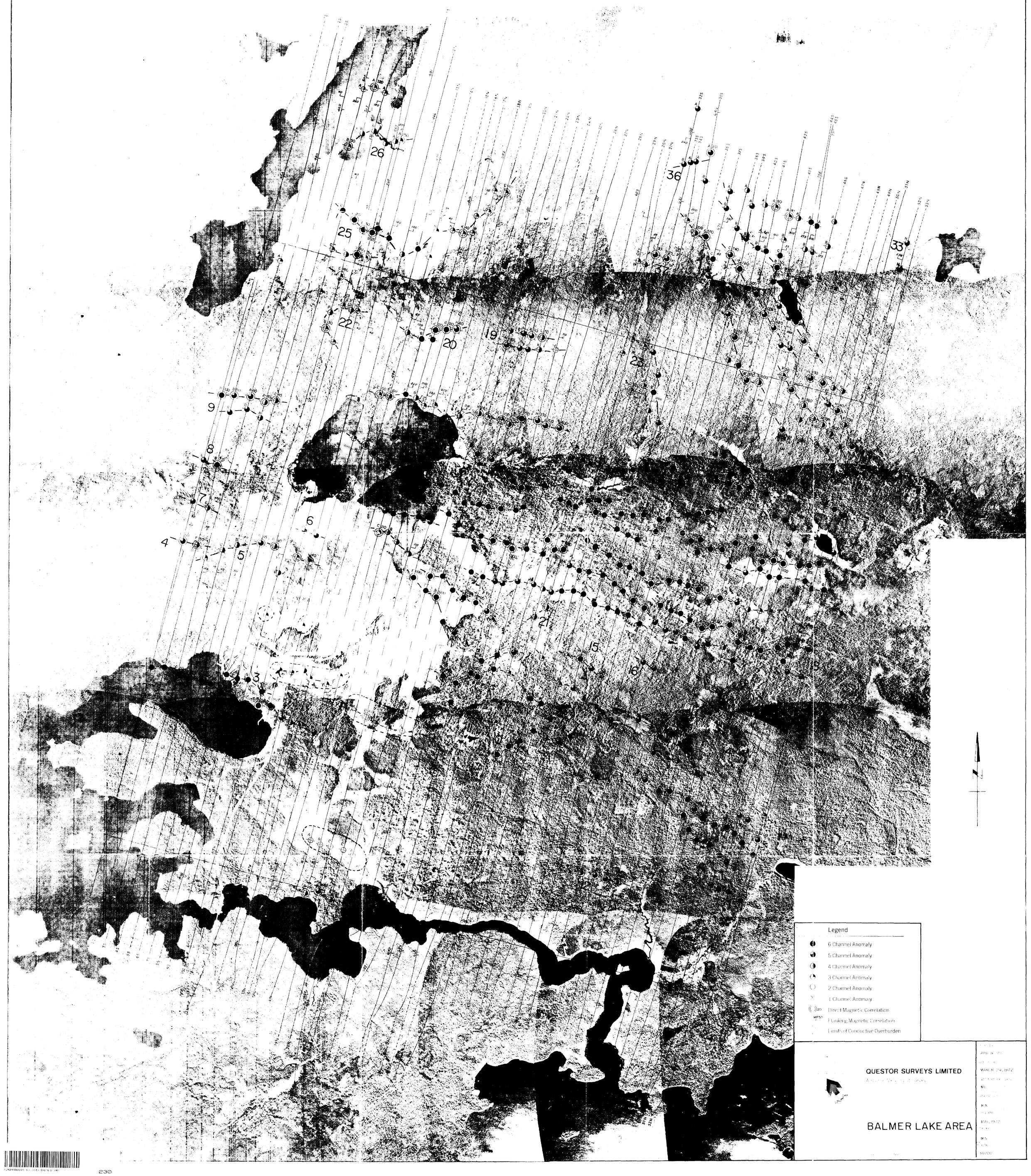
Flight Path Recovery

Data Reduction

Completed

Checked

File No.


26
25
22
20
19
23
36
37
33
9
8
7
6
4
5
21
15
16
3
Legend
6 Channel Anomaly
5 Channel Anomaly
4 Channel Anomaly
3 Channel Anomaly
2 Channel Anomaly
1 Channel Anomaly
Direct Magnetic Correlation
Flanking Magnetic Correlation
Limit of Conductive Overburden
QUESTOR SURVEYS LIMITED
BALMER LAKE AREA
MAY, 1972

KRL 322762

N

ANDESITE

AMPHIBOLITE

"IRON" FORMATION

DDH-20

DDH-19

DDH-18

"IRON" FORMATION "A" INTERPRETED FROM GEOPHYSICS

SEDIMENTS WITH "IRON" FORMATION

ANDESITE

CONTACT INTERPRETED FROM DRILLING

"B"

"A"

X S.P. ANOM.

X S.P. ANOM.

4

4M

3M

3M

CONTACT INTERPRETED FROM DRILLING

AMPHIBOLITE

ANDESITE

SEDIMENTS

DDH

(4) - AERIAL E.M. INTERCEPT

AERIAL ANOMALY #14
BALMER #3 (GROUP 6)
E.M. 16 SURVEY (FILTERED)
SHOWING INTERPRETATION BASED ON GEOPHYSICS, AND SUGGESTED DRILL HOLES.
Scale 1"-100'
FEB 24, 1973
J V Bruce

BALMER TWP.
RED LAKE AREA

63.3143

N

322761

322762

322746

DDH-20

DDH-19

DDH-18

IRON FORMATION

AMPHIBOLITE

SEDIMENTS WITH IRON FORMATION

ANDESITE

4

4M

3M

3M

63.3143

DICKENSON MINES LTD.

FOLLOW-UP GROUND RECONNAISANCE OF OF AERIAL ANOMALIES

SELF POTENTIAL – ANOMALY #14

BALMER # 3 (GROUP 6)

SCALE: 1"=100'

S.V. BURR

SEPTEMBER 1972

ABINC

KRL 1007

KRL 20888

KRL 20892

KRL 20893

KRL 20889

OLD C.M.& S. SHOWING TRENCHES

PORPHYRY DYKE

TRENCH

FLOWN N-S

FLOWN E-W

QUESTOR AERIAL INTERCEPTS

REDCON MINES LIMITED

#25 ANOMALY AREA

SCALE: 1"=100'

S.V. BURR : SEPTEMBER 1972

63.3143

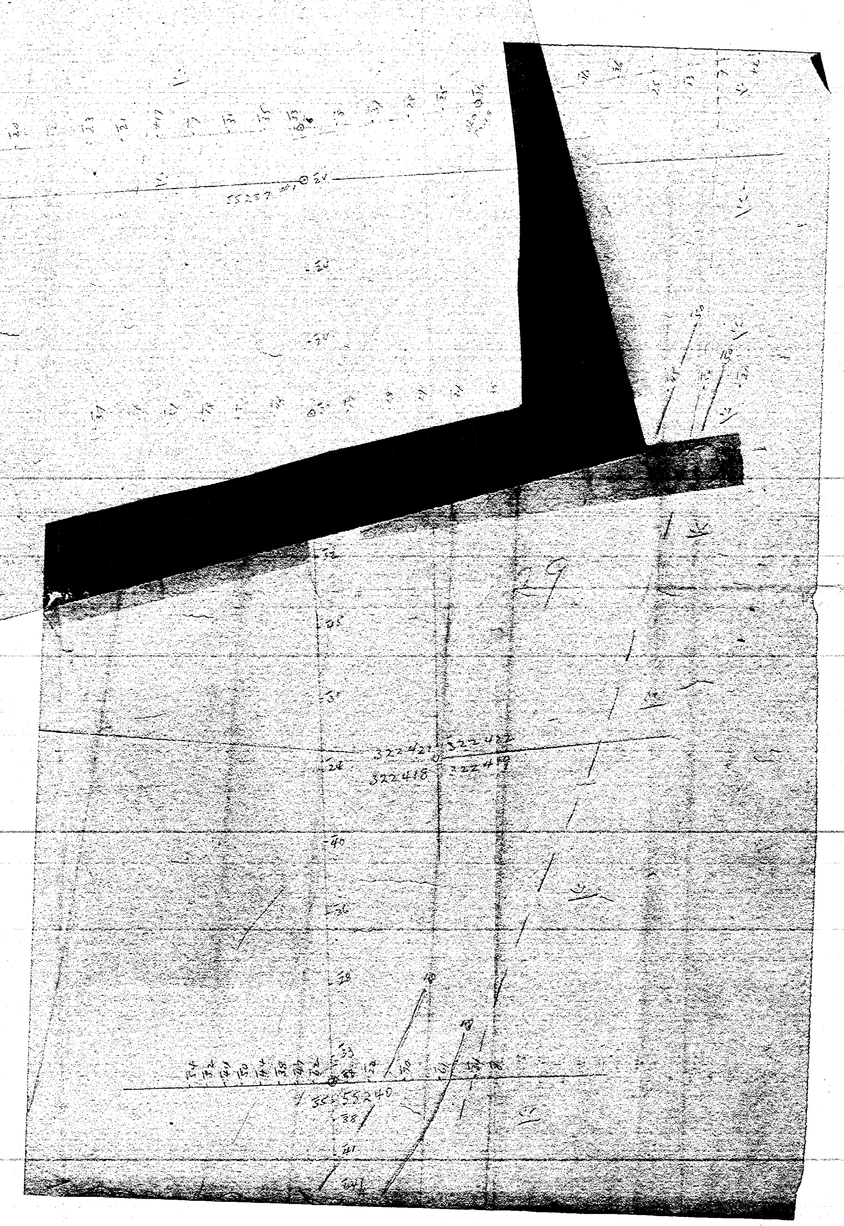
SELF POTENTIAL TRAVERSE RECONNAISANCE

BATEMAN TWP., RED LAKE AREA

GROUP 4

AERIAL ANOMALIES 28, 29.

Scale 1" = 100'



KRL 322581

KRL 322582

0+00E

2+00E

6+00E

10+00E

14+00E

18+00E

20+00E

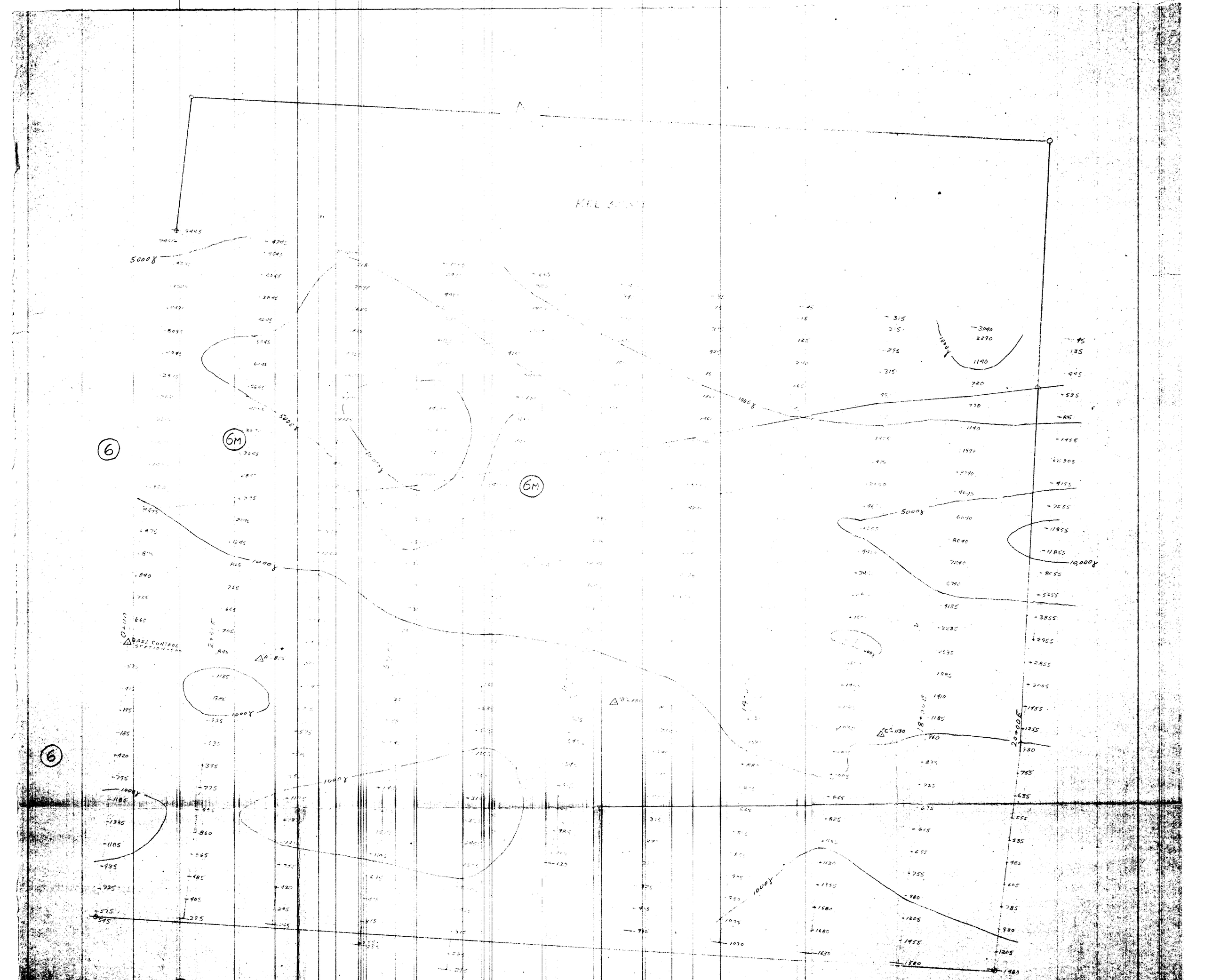
AERIAL ANOMALY #18
BALMER #A (GROUP 7)
E M 16 SURVEY (FILTERED)
BALMER TWP. RED LAKE, ONTARIO
SCALE 1"=100'

MAP #

March 21, 1973

LEGEND

(5) - QUESTOR AERIAL E.M. ANOMALY.



LEGEND

(5) - QUESTOR AERIAL E.M. ANOMALY

(5)

AERIAL ANOMALY #18

BALMER (GROUP 7)

MAGNETOMETER SURVEY

BALMER TWP., RED LAKE, ONTARIO

SCALE 1" = 100'

March 21, 1973

63.3143

N

700 X

700 Y

KRL 2111 5

KRL 2111 4

CLAIM KRL 21115

LINCKER RED LAKE MINES LT

BALMER TOWNSHIP RED LAKE ONTARIO

PARTIAL MAGNETOMETER SURVEY

SCALE 1"=100'

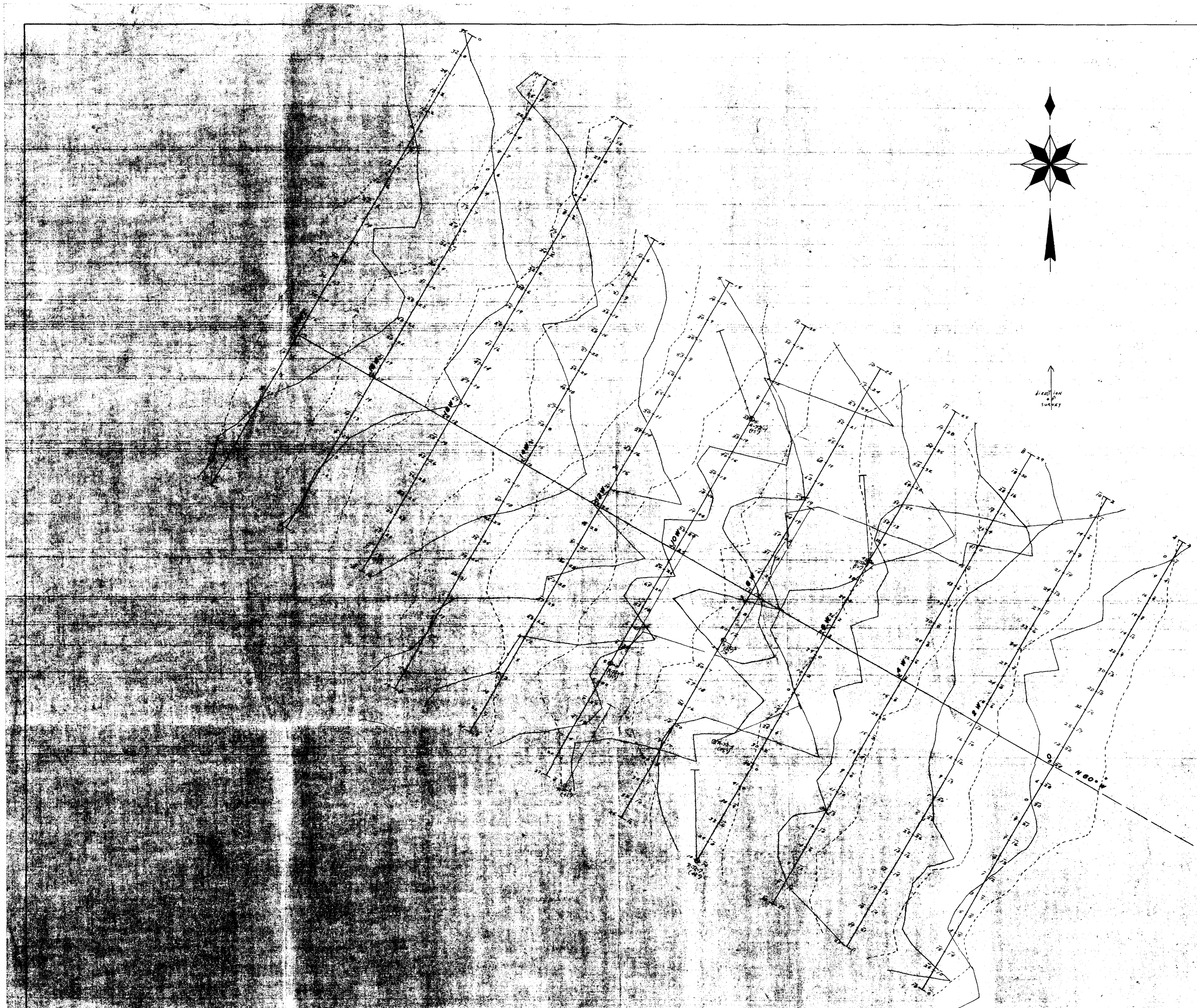
MARCH 26, 1973

LEGEND

QUESTOR AIRBAL EM INTERCEPTS

63.3143


KRL
2115
CLAIM KRL 2115
LEGEND
NORTH - SOUTH LINES
MAGNETIC TRENDS FROM
MAGNETIC SURVEY
63.3143



EM-16 PROFILES

REDCON GOLD MINES LTD.
BALMER TWP.
"CORE SHACK ANOMALY"
SCALE: 1" = 100' JULY 31, 1972.

63-3143

MAG

GOLD TREND?

0.9 t/o (P-1)

0.1 t/oz (P-3)

N 60° W (MAGNETIC)

LEGEND

700 - ISOMAGNETIC CONTOUR IN GAMMAS

63.3143

MAP 2

MAGNETIC SURVEY

REDCON GOLD MINES LTD.
BALMER TWP.
"CORE SHACK ANOMALY"

SCALE: 1" = 100' JULY 31, 1972.

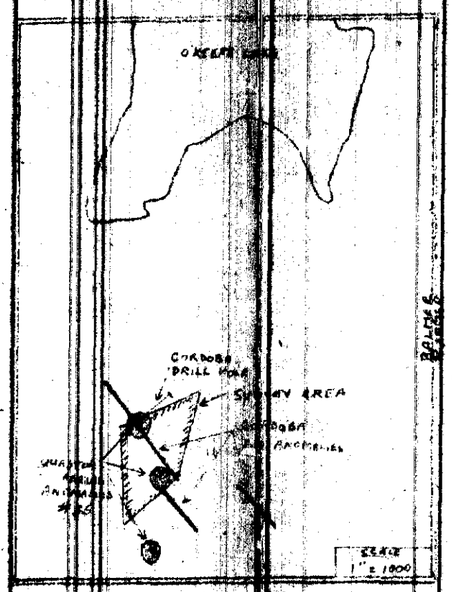
SURVEY WORK BY R MERCIER
PLOTTING & CONTOURS BY R V Burt

N

OLD DRILL ROAD

OLD DRILL HOLE

PACE + COMPASS TRAVERSING



LEGEND

63.3143

EM 16 RESULTS OVER
AERIAL ANOMALY # 35
(FRASER FILTRATION)
O'KEEFE GROUP

SCALE 1" = 100'

DATE: NOVEMBER 30, 1972