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HORIZONTAL LOOP ELECTROMAGNETIC (HEM-17)

SURVEY REPORT

on the

GOLDEN RANGE PROPERTY

Denton Township  
Porcupine Mining Division, Ontario

for

GOLDEN RANGE RESOURCES INCORPORATED

by

Kian A. Jensen, H.B.Sc.  
Geologist/Geophysicist

October, 1984

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**MINING LANDS SECTION**



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## INTRODUCTION

A Horizontal Loop Electromagnetic survey using the Geonics HEM-17, was conducted on the 30 contiguous claims in Denton Township, Porcupine Mining Division, Ontario.

The purpose of the HEM-17 survey was to identify the locations of conductive faults and shear zones, and to located favourable targets for gold mineralization.

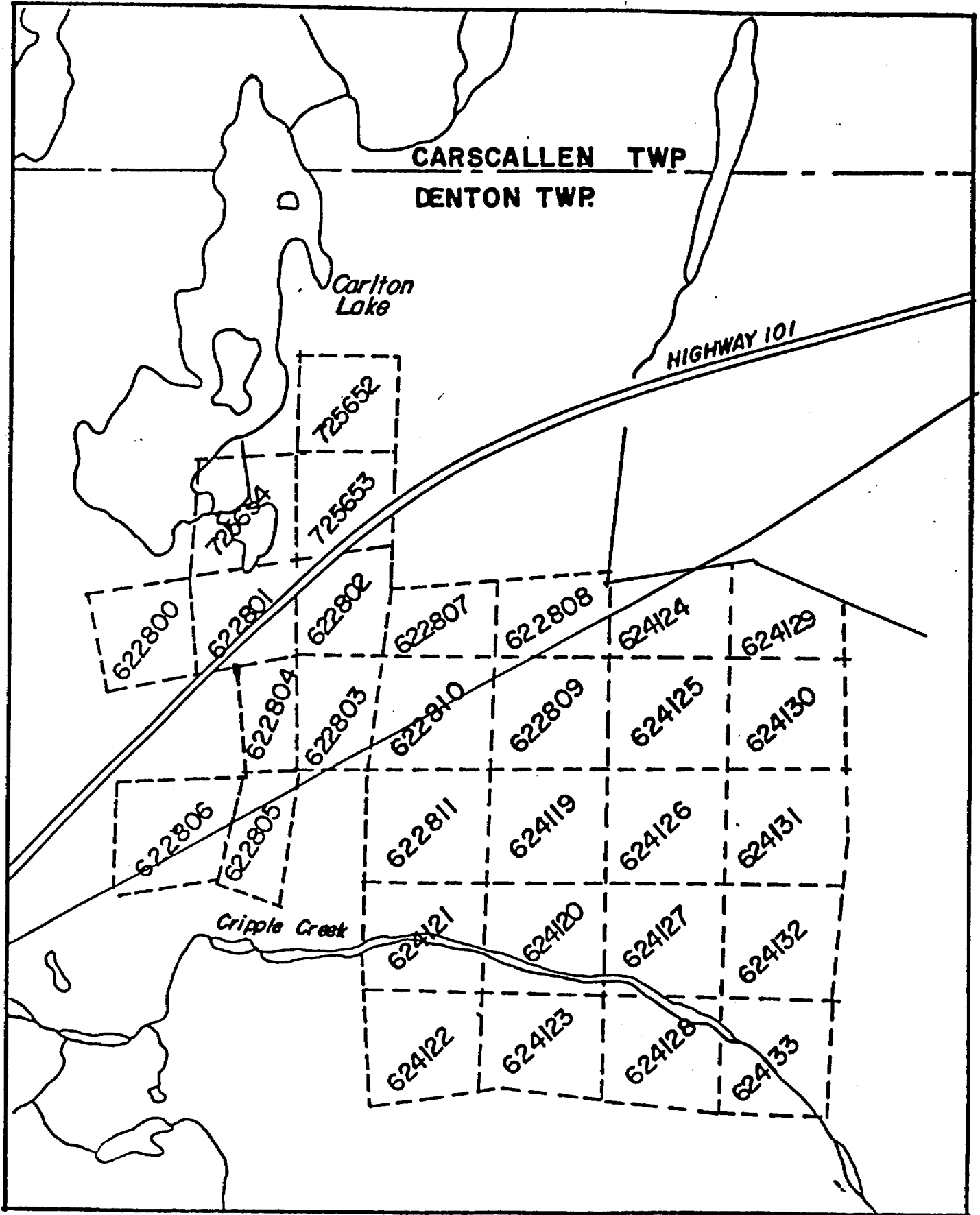
The field work was conducted by Dave Black and Dan Brown from July 30 to September 18, 1984. The interpretation and report were done by K. Jensen on October 6 to 10, 1984.

A total of 1283 stations were read of these 1087 were valid readings, 153 stations were lost due to electrical noise from the power line traversing the property, 34 stations were lost due to access across Cripple Creek, and 9 others were lost for various reasons.

## LOCATION AND ACCESS

The Golden Range Resources property is located in the north central part of Denton Township, District of Cochrane, Porcupine Mining Division (Figure 1). The property is about 20 miles southwest of the city of Timmins, Ontario.

Figure 1: Location and Claim Map of the Golden Range Resources property.



Access to the west central part of the claims is via an old gravel road which extends south for 0.6 miles from Highway 101, about 3 miles west of Highway 144. Old bushroads and trails traverse the property as far as Cripple Creek near the south claim boundary.

#### PROPERTY

The Golden Range resources property consists of 30 contiguous unpatented claims in Denton Township (Figure 1).

Line cutting was previously done on the property. The baseline has a bearing of due east and is picketed every 100 feet from 40+00 West to 52+00 East. North-south grid lines were cut at 400 foot separations and picketed every 100 feet. Three tie lines exist at 26+00 North, 39+00 South and a short tie line at 13+00 North.

The claim group consists of the following unpatented mining claims:

P-622800	P-622801	P-622802	P-622803	P-622804	P-622805
P-622806	P-622807	P-622808	P-622809	P-622810	P-622811
P-622819	P-622820	P-622821	P-622822	P-622823	P-622824
P-622825	P-622826	P-622827	P-622828	P-622829	P-622830
P-622831	P-622832	P-622833			
P-725652	P-725653	P-725654			

## PREVIOUS WORK

This property has been explored throughout the history of the Porcupine Camp. The earliest work dates to 1912. The following is a brief list of the exploration activities in the area:

- Prior to 1940 Suspected trenching and prospecting, no records are available.
- 1920's to 1940 Aumo Porcupine Gold Mines conducted trenching and diamond drilling on the claims tieing onto the north boundary.
- 1950 Dominion Gulf Company held claims covering the south and east half of the property. The work consisted of a magnetic and geological survey.
- 1961 Hollinger Mines conducted broadside SE200, inline SE200 a magnetic and geological surveys in the Cripple Creek area. They also conducted work to the northeast of the property consisting of magnetic and EM surveys and diamond drilling.
- 1973 Meridian Mining and Exploration Ltd held some of the southern claims. Work consisted of a magnetic and Turam EM surveys and some diamond drilling.
- 1977 to 1981 Canadian Nickel (INCO) Part of their eastern claims is in Golden Range Resources. Work included geological and magnetic surveys with summary of vertical loop EM survey, some diamond drilling.

- 1981 Denton Township was remapped by the Ontario Geological Survey Map P.2501.
- 1984 Golden Range Resources Inc. has conducted geological mapping and the HEM-17 surveys.

### GEOLOGY

Regionally, the area is underlain by Early Precambrian (Archean) rocks of volcanic and sedimentary origin.

General property geology is shown in Figure 2 with Table 1 indicating the lithological units.

Structurally, there appears to be two trends to the faulting or shearing in the area, these being north-northwest and west southwest. There is limited information indicating the first group while the second group is indicated by the Destor-Porcupine, the Bristol and Thorneloe Fault Zones and the McCoshen Shear Zone.

Table 1 Geological Units

11 Diabase dikes

8a Quartz Diorite

5a Phyllite, quartz-sericite-carbonate schist

5b Chlorite-carbonate schist

META-SEDIMENTS

5c Sulphide-chert Iron Formation

MAFIC TO INTERMEDIATE METAVOLCANICS

2a Massive flows

2b Tuff breccia

MAFIC TO ULTRAMAFIC METAVOLCANICS

1a Massive flows

1b Serpentinized-talcosse peridotite



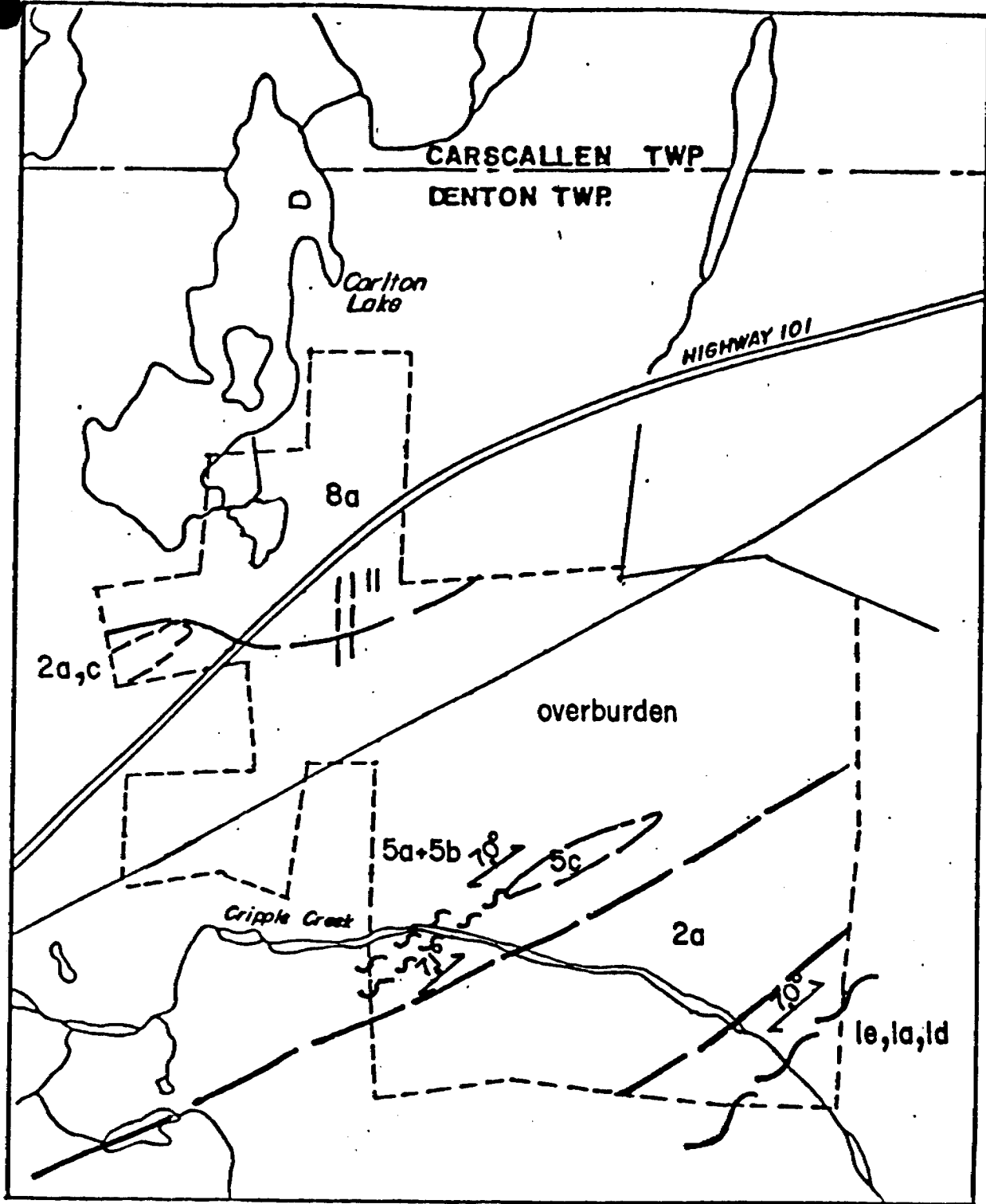


Figure 2: General Geology of the property of Golden Range Resources.

## GEOPHYSICAL SURVEY

### INTRODUCTION:

A Horizontal Loop Electromagnetic survey was completed on 24.3 miles of grid using the Geonics HEM-17 Electromagnetic unit with a frequency of 1660 Hz. and a coil separation of 300 feet. The instrument specifications are located in Appendix 1. A total of 1283 readings were taken at an interval of 100 feet along the east-west grid lines. A total of 34 readings were lost due to Cripple Creek, 153 reading due to the interference of the hydro power line and 9 readings due to other reasons.

The survey was conducted from July 30 to September 18, 1984 by Dave Black and Dan Brown. Drafting was completed by Feather Pen Enterprises.

### PROCEDURES:

The Hem-17 contains two loops, a transmitter and a receiver separated by a 300 foot connecting cable. The readings are obtained by selecting a frequency, 1660 Hz., and leveling both loops to a horizontal position. After this is done and the transmitter is on, which generates a primary electromagnetic field, the receiver measures the secondary field as a percentage of the primary field.

The readings are the real (in-phase) and the imaginary (quadrature) components of the secondary field.

The readings were done on the north-south grid lines at a spacing of 100 feet.

#### INTERPRETATION:

The interpretation was conducted by the author from October 6 to 10, 1984.

The anomalies are lettered from 'A' TO 'N' and are shown on the two maps in the back folder Figure 3 and 4. The apparent width of the anomalies are shown on the maps and tabulated with other information as shown in Table 2.

TABLE 2 HEM-17 Anomalies

ANOMALY	WIDTH (feet)	LENGTH (feet)	CLASSIFICATION	GEOLOGICAL SETTING
A	narrow	one line	magnetic	schist
B	narrow	} 1600	possible related	} schist
B'	narrow			
B''	narrow			
C	narrow	1000		schist
D	10'	one line		schist
E	2 narrow or 100'	one line	related to D moderate	schist
F	10'-15'	one line		metavolcanics
G	10'	one line		metavolcanics
H	15'-40'	1400	good	schist-IF
I	10'	one line	poor to moderate	schist
J	10'-20'	600-700	poor to moderate	schist
K	10'-30'	1100-1200	moderate	schist
L	60'-70'	one line	good	schist
M	narrow	one line	magnetic	schist
N	< 25'	one line	poor to moderate	schist

## CONCLUSIONS & RECOMMENDATIONS

A total of 14 anomalies were located on the Golden Range Resources property. The majority of these conductor trend in a north northeast to northeast direction and appear to be parallel to the strike of the lithological units. There are two exceptions, being anomaly B, B' and B'' and H.

The anomaly B and its related parts appear to be parallel to the faults and shear zones trend rather being parallel to the geological contact. The other exception is anomaly H which is trending across the possible Iron Formation unit, this may indicate a shear zone trending in the north west direction.

Anomaly E may be two narrow conductors at different depths and the northern one connecting to anomaly D. The other possibility is that anomaly E is a wide zone (about 100 feet) and narrows rapidly to form anomaly D.

Anomalies I, J, and K appear to be moderate to good conductors, however there is a large amount of interference between these anomalies.

Anomalies M and N may be related but the orientation of the survey lines can not provide adequate information.

Anomalies A and M appear to be permably and magnetic.

Correlation between the HEM-17 survey and other geophysical surveys should be completed to yield a more accurate evaluation of the anomalies. Upon completion of this, a compliation of all the data from previous assessment work by other companys should be done.

The following anomalies may warrant further geophysical work to obtain more accurate information, these being anommalies H, I, J, K, L, and N. However, if the above compilation is completed, further investigation may be omitted in favour for either overburden drilling and/or diamond drilling.

CERTIFICATE

I, Kian A. Jensen, submit this document to certify that the following statements are, to the best of my knowledge, true and accurate:

- 1) That I received an Honour B.Sc. degree in Earth Science, Geology Major at the University of Waterloo in 1975.
- 2) That I have been employed as a geologist and/or geophysicist by various exploration and consulting companies since 1978.
- 3) That I have been and still am a member in good standing in the following associations:
  - a) Society of Exploration Geophysicists (1981) - Associate
  - b) Geological Association of Canada (1983) - Fellow
- 4) That I am the author of the corresponding assessment report, the interpretation and familiar with the geology of the are under consideration.
- 5) That my residence is P.O. Box 37, South Porcupine, Ontario P0N 1H0.

Respectfully,

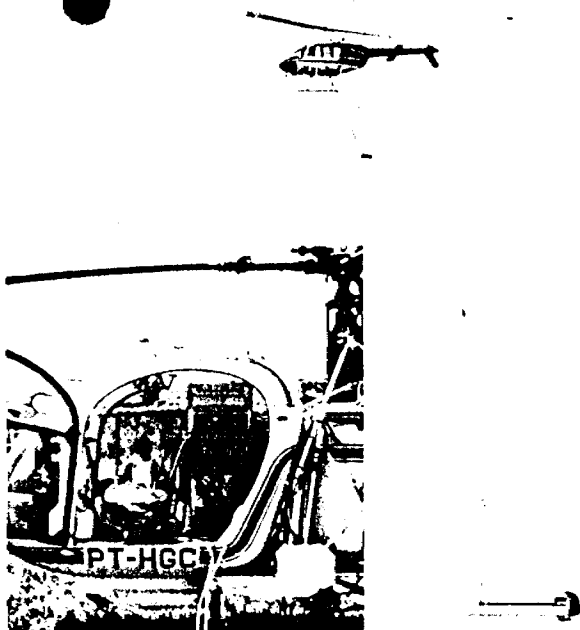
Dated:        day of

Kian A. Jensen



# DIPOLAR EM INSTRUMENTS

## HELICOPTER EM SYSTEM



### EM33

High quality data with repeatability and proven reliability — the Geonics EM33 represents a significant advance in the state-of-the-art in helicopter electromagnetic exploration systems. The use of high quality composite material for the bird shell and our unique suspension system eliminate bird bending as a source of noise. This means the data is not degraded by turbulence and the system produces as long as the pilot can fly.

The 6 meter bird facilitates easy shipping and handling. A total hook load of 165 kg allows the use of light to medium lift turbine helicopters depending on the terrain.

State-of-the-art electronic signal processing insures trouble-free operation while providing large dynamic range, low zero drift, and immunity to atmospheric and cultural interference.

### Specifications

<b>MEASURED QUANTITY</b>	In-phase and quad-phase components of received magnetic field in parts per million of primary field.
<b>NOISE</b>	Noise envelope less than 0.5 ppm for 1 sec. integration.
<b>ZERO DRIFT</b>	Typically less than 15 ppm per hour. Manual electronic correction from console.
<b>CALIBRATION</b>	'0-coil' internal to bird gives inflight gain and phase calibration by means of push button activation from console.
<b>COIL SEPARATION</b>	6 meters
<b>COIL ORIENTATION</b>	Vertical Coaxial or Horizontal Coplanar
<b>OPERATING FREQUENCY</b>	736 Hz nominal
<b>POWER SUPPLY</b>	24-28 VDC (225 watts)
<b>CONSOLE OUTPUTS</b>	<ul style="list-style-type: none"> <li>● In-phase</li> <li>● Quad-phase</li> <li>● 50/60 Hz power line monitor — analog or fiducial</li> <li>● Spherics monitor — analog or fiducial</li> </ul>
<b>OUTPUT INTEGRATION</b>	Second order low pass filter. In-phase and quad-phase outputs are simultaneously available at two rise times, typically 0.6 and 2.4 sec.
<b>OUTPUT LEVELS</b>	±1.0 volt FSD (with x10 over-range) from low impedance source.
<b>DIMENSIONS</b>	Console : 19" x 16" x 5.25" Bird : 7.3 m (with end caps) in length; 0.5 m diameter Tow Cable : 30 m in length
<b>WEIGHT</b>	Console : 10 kg Bird : 165 kg hook load

## HORIZONTAL LOOP



### EM17/17L

A lightweight, reliable instrument for practical exploration work — the EM17 and EM17L have accumulated an extensive record of field service in setting the industry standard for automatic readout, single frequency slingram system.

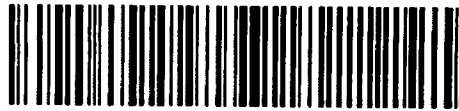
#### FEATURES

- Automatic meter readout to take fast accurate readings
- Lightweight coils and electronics
- Powered by readily available flashlight batteries
- Thin, lightweight, unshielded reference cable
- Excellent noise suppression.

### Specifications

<b>MEASURED QUANTITY</b>	In-phase and quad-phase components of received magnetic field as a percentage of primary field.
<b>SENSITIVITY</b>	In-phase : ±20% or ±100% Quad-phase : ±10% or ± 50%
<b>READABILITY</b>	In-phase : 0.5% Quad-phase : 0.25%
<b>REPEATABILITY</b>	±1%
<b>COIL SEPARATION</b>	EM17 : 100, 200, 300, 400 feet EM17L : 200, 300, 400, 600 feet
<b>OPERATING FREQUENCY</b>	EM17 : 1634 Hz EM17L : 817 Hz
<b>RECEIVER BANDWIDTH</b>	0.1 Hz
<b>COIL ORIENTATION</b>	Horizontal Coplanar or Vertical Coaxial
<b>REFERENCE CABLE</b>	Lightweight, 2 wire unshielded
<b>POWER SUPPLY</b>	Transmitter : 8 disposable 'D' cells Receiver : 8 disposable 'C' cells
<b>DIMENSIONS</b>	Receiver Console : 19.5 x 13.5 x 26cm Transmitter Console : 15 x 8 x 26cm Coils : 63cm diameter
<b>WEIGHTS</b>	Receiver Console : 3.1 kg Receiver Coil : 2.6 kg Transmitter Console : 3.0 kg Transmitter Coil : 3.6 kg EM17 : 5.0 kg EM17L Shipping Weight : 34. kg EM17 : 41. kg EM17L





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GEOLOGICAL REPORT  
of the  
DENTON TOWNSHIP PROPERTY  
Denton Township  
Porcupine Mining Division  
District of Cochrane  
for

GOLDEN RANGE RESOURCES INCORPORATED

**RECEIVED**

OCT 11 1984

**MINING LANDS SECTION**

by

Nadia Cairra, B.Sc.  
Ian Coster, B.Sc.

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Robert S. Middleton Exploration Services Inc.  
P.O. Box 1637, Timmins, Ontario  
August 30, 1984

P4N 7W8



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- Figure 2 Claim Index Map 1" = 1/2 mile
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- Figure 4 Property Geology 1" = 400 feet (back pocket)

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- 2. Description and Location of Rock Samples

APPENDIX

Certificate of Analysis (Bell-White Analytical Labs)

SUMMARY

The Denton Township property is underlain by a series of mafic to ultramafic flows and/or intrusions, ranging in composition from andesitic to basaltic to peridotitic (komatiitic) and also by sheared, sericitic, carbonatized rocks. These rocks are intruded by a felsic intrusion, ranging in composition from diorite to quartz diorite and by north-south striking diabase dikes.

A series of east-northeast striking faults and shears occur on the Denton Township property. "The projected position of the Destor-Porcupine fault passes through the northwest portion of the claim group. The presence of gold deposits near this zone on both sides of the Denton claims would tend to confirm this interpretation. It is a reasonable presumption that similar veins exists in the Denton claims."<sup>1</sup> Two other projected northeast trending faults occur on the Denton property that may host similar gold mineralization to the Destor-Porcupine fault.

A number of old pits and trenches were located on the property from which 23 grab samples were collected and were geochemically analyzed for gold, arsenic and, in some cases, copper and zinc. The mineralization appears to consist of disseminated, fine to medium grained pyrite and locally

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<sup>1</sup> 1983: Report on the Denton Claims, Roy Rupert, Consulting Geologist.

chalcopyrite, sphalerite and arsenopyrite in shear zones and silicified, carbonatized zones within the mafic to ultramafic rocks.

An untrenched shear zone within intermediate metavolcanics and/or metasediments was uncovered on line 0E and line 4E at 1900S along Cripple Creek. The dacitic metavolcanics or siliceous sediments have been altered to a sericitic, carbonatized phyllitic schist containing trace to 1% disseminated pyrite.

#### INTRODUCTION

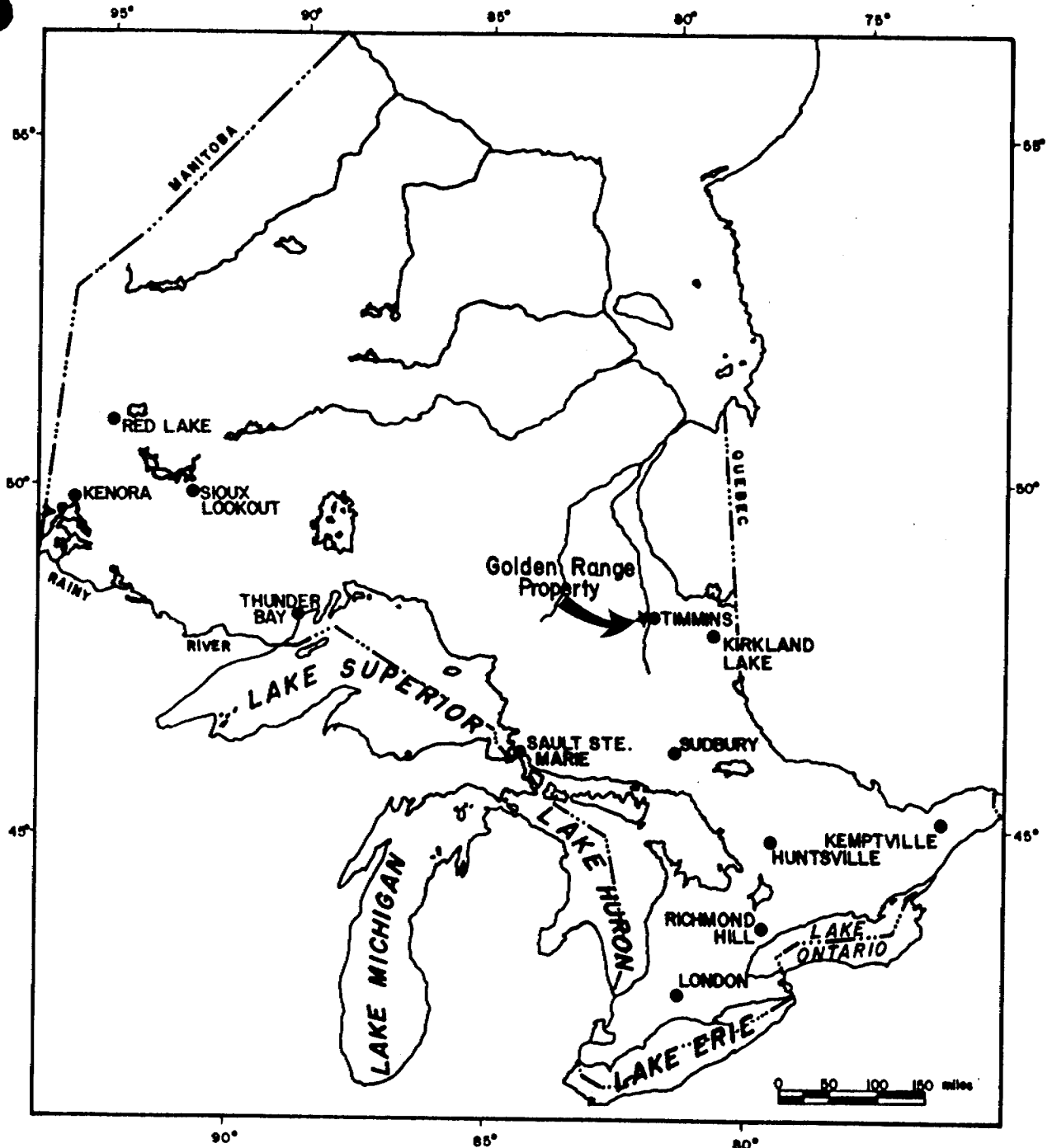
The thirty claims of Golden Range Resources were geologically mapped by Ian Coster and Nadia Caira from July 29th to August 4th, 1984, for Golden Range Resources Incorporated, 189 Preston St. South, Timmins, Ontario. The claim group is in the north-central portion, Denton Township, and covers approximately 1200 acres of mining land. The claim numbers are P-725652 to P725654 and P622800 to 622811 and P624119 to 624133, all inclusive. A portion of claim 725654 is covered by a pond of Carlton Lake and Cripple Creek flows through the southern part of the claim group.

Geological mapping was done on a pre-existing grid, having an easterly trending baseline zero in the centre of the claim group on the northern part of claims 622806, 622805, 662811,

624119, 624126, 624131 with north-south trending lines 400' apart. These lines were picketed every 100 feet. A tieline, TL26N, was cut east across the northern boundary of claims 662801, 662802, 662807, 622808, 624124 and 624129, approximately 2,600 feet north of the baseline. A second tieline TL395 was cut east, across the southern boundary of claims 624122, 624123, 624128, and 624133, at approximately 3,900 feet south of the baseline 0. A third shorter tieline TL13N was cut east, across the southern boundary of claim 622800, approximately 1,300 feet north of the baseline 0.

LOCATION AND ACCESS

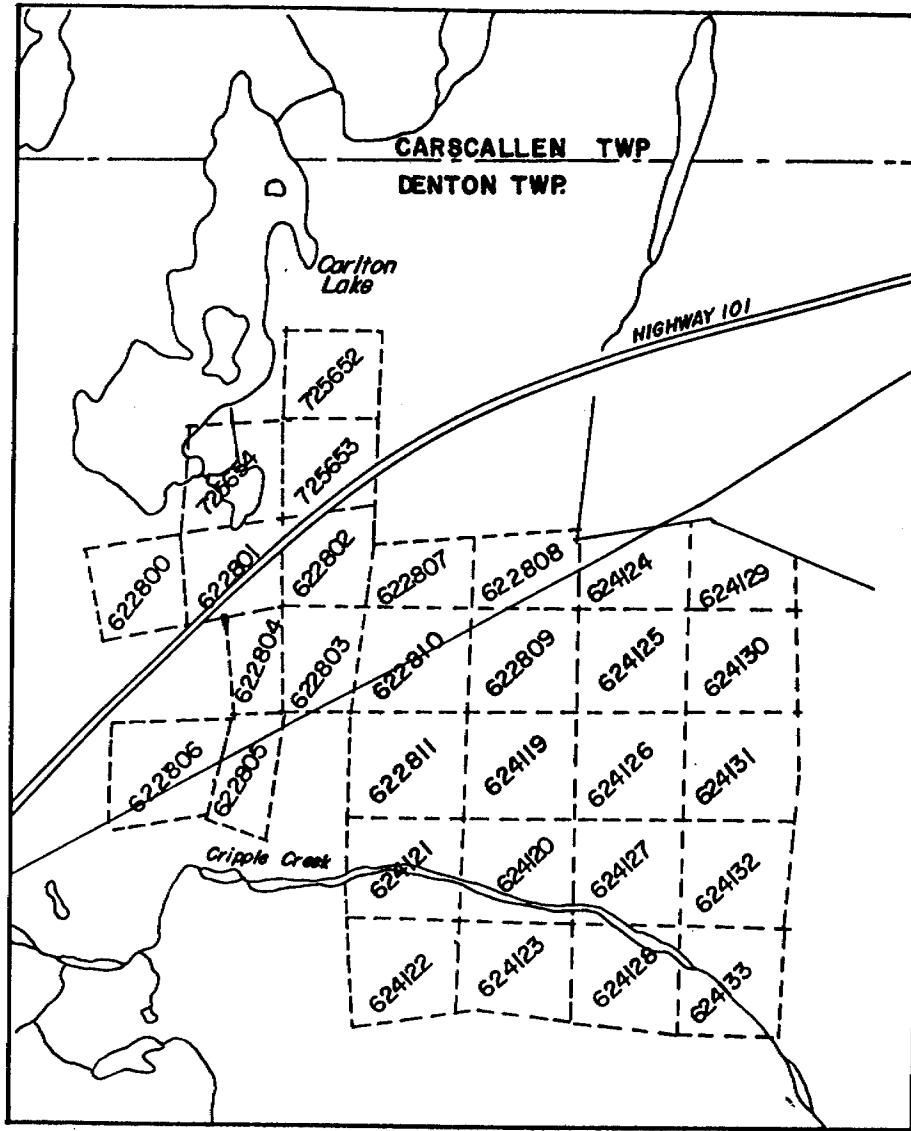
The Golden Range Property is located in the north central part of Denton Township in the District of Cochrane, Porcupine Mining Division, about 20 miles southwest of the City of Timmins, Ontario (Figure 1). Access to the west central part of the claim group, and specifically to the southwest corner of claim 622803 is via an old gravel road which extends south for 0.6 miles from Highway 101, about 3 miles west of Highway 144 that leads south to Sudbury. Other old bushroads and trails traverse the property as far as Cripple Creek near the southern boundary of the claim group.



PROVINCE OF ONTARIO

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.	
	for	GOLDEN RANGE RESOURCES
	Title	PROPERTY LOCATION MAP
	Date: Sept. 1984	Scale: N.T.S.
	Drawn: C.G.	Approved: File: M-72

FIG. 1



REVISIONS	<b>ROBERT S. MIDDLETON EXPLORATION SERVICES INC.</b>	
	for	<b>GOLDEN RANGE RESOURCES</b>
	Title	<b>CLAIM INDEX</b>
		FIG. 2
	Date: Sept. 1984	Scale: 1" = 1/2 mi N.T.S.
	Drawn: A.W.	Approved: File: M-72

#### TOPOGRAPHY AND VEGETATION

Scattered outcrop occurs over less than 5% of the property. Topography in the area is limited to shallow rises of sand, gravel and clays gouged by the drainage pattern of Cripple Creek which drains Carlton Lake. Banks along the creek attain up to 60 feet in height.

Vegetation consists of mainly spruce, balsam, birch and poplar with cedar and alder in major swampy areas.

#### PREVIOUS WORK

The previous history has been outlined in the report on the Denton Township claims by Roy Rupert, Consulting Geologist. The history is as follows.

1. Mineral exploration of the property dates from at least 1910. The 1912 Annual Report of the Ontario Bureau of Mines includes a description of the Cripple Creek Gold Mining area. Accurate records of early exploration prior to 1940 are unavailable, but old pits and trenches noted in more recent reports indicated that very thorough surface prospecting has been conducted where outcrop exists, and some deep pits indicate testing of magnetic zones prior to 1940. This intensive prospecting is a reflection of the frequency of nearby gold occurrences, and the favourable conditions for



gold deposition recognized here. Direct exploration has been restricted by lack of outcrop.

The reports described below indicate that a number of technical surveys have been completed, with varying success due to orientation and depth-penetration problems. Significant points noted are that the north-west portions of the claims have never been surveyed by prior claimants, and that properly oriented surveys have not tested the north and west central portions of the claims in the past. Careful design and orientation of geophysical surveys is required for effective work here.

2. In 1981, A.G. Choudhry remapped Denton Township for the Ontario Geological Survey. This work is published as Preliminary Map P2501.
3. Canadian Nickel (INCO) held 22 claims coincident with the eastern rectangular part of the Golden Range Resources Inc. property from 1977 to 1981. Work reported in the Timmins resident geologist's file T1834, includes geological and magnetic surveys, and the magnetic survey plans also summarize results of a vertical loop electromagnetic survey which is not reported in detail. Grid orientation was 115°. Logs of five diamond drill holes (of eight apparently drilled) are reported without sampling and assay data. Drilling was done in 1977 and 1980, and the five holes

recorded a total of 1,421 feet.

This work outlines several conductors of a stratiform character and indicates a need to revise previous structural interpretations.

When compared with the results from older overlapping surveys, this work by CANICO emphasizes the need for proper geometric orientation of grid lines and geophysical equipment. Several conductors were detected which earlier surveys missed.

Assays for drill holes were not available, but persistence in drilling the apparent extension of Aumo #3 vein would indicate that some encouragement was obtained.

The writer notes that the conductor detected over the Aumo #3 extension by INCO terminated southwards as its direction veered to the southwest parallel to survey lines. Further work is warranted there.

4. Dominion Gulf Company held claims covering the south and east halves of the Golden Range Resources Inc. claims in 1950. Thorough magnetic and geological surveys by H. Reven and F.J. Sudgen describe several areas of interest. Sudgen's notes on altered outcrops indicate particular potential for gold deposition. There is no record that Dominion Gulf completed any subsequent drilling (Timmins resident geologist File T397).

5. Meridian Mining and Exploration Ltd. held a block of claims overlapping the eight southern Golden Range Resources claims in 1973. Magnetic and Turam electromagnetic surveys were conducted by R.V. Oja, with emphasis on tracing and investigating an ultra-basic rock horizon which crosses the southeast corner of the Golden Range Resources property. This horizon is discussed in Area 2 discussion in this report. Follow-up drilling of this horizon was restricted to four holes about 4,500 feet east of the Golden Range Resources block (Timmins resident geologist file T1569).
6. In 1961, Hollinger Mines conducted broadside SE200, in-line SE200 electromagnetic, magnetic, and geological surveys in the area of Cripple Creek. A minor conductor in the southwest part of the property was ignored. In Area 1 discussion within this report a sheared quartz-sericite-carbonate schist was found in the southwest corner of the Denton Claims. It appears to be the extension of one drilled by CANICO in 1980. This work involved no reported follow-up (Timmins resident geologist file T355).
7. In 1962, 1963, and 1967 Hollinger Mines drilled numerous hole in Denton and Carscallen Townships, northeast of the Golden Range Resources claims, following magnetic and electromagnetic surveys in 1962. Holes encountered up to 120 feet of overburden. This work emphasized strong conductors

northeast of the Aumo Mines deposit. Similar work was done on property held by Hollinger, east of Mahoney Creek at this time. (Timmins resident geologist file T698 and T556).

8. In 1982, Hollinger Argus Ltd. completed VLF electromagnetic surveys using NAA Cutler as a source. This work extended two miles west from the southwest corner of Golden Range Resources.

Several parallel zones were indicated in areas where previous surveys had missed conductors. Drilling on claims 568503 indicated carbonatized andesite and ultrabasic rocks with minor pyrite, arsenopyrite and tourmaline (Timmins resident geologist file T2412).

9. Brown McDade Mines Ltd. holds a block of claims adjoining northwest of the Golden Range Resources claims. Extensive stripping and eight drill holes are reported there. This exploration program is continuing (Timmins resident geologist file T1991).

On the Brown McDade property, five veins consisting of lenses of quartz up to three feet wide have been exposed and mined out in shallow open cuts in an area about 500 feet in diameter. Host rocks consist of coarse tuffs, felsic volcanic breccia and intermediate feldspar porphyry intruded by quartz diorite. A similar zone in Area 4 discussion within this report was found on the western boundary of the

Golden Range Resources property. Based on the appearance of the ends of the veins in cuts and the material on dumps, the quartz lenses are up to three feet wide by 120 feet long and occupy chloritic or talcose sheared zones in any of the above rock types. Dips are steep and strike directions from N20°W to N75°E. The sinuous veins strike close to north and south. Veins are mineralized by two to five percent pyrrhotite, with lesser pyrite, minor chalcopyrite and traces of sphalerite.

These veins and shears contain enough sulphides to be weak conductors. However, it should be noted that coupling of north-south conductors with NAA Cutler will be doubtful, and detection on north-south lines is improbable.

10. Armo Porcupine Gold Mines Ltd. and associated companies explored gold deposits on claims adjoining north of the Golden Range Resources property from the 1920's to the late 1940's. Over sixty diamond drill holes and numerous trenches located several quartz veins and one stratabound cherty sulphide horizon with significant gold values. A report by Nelson Hogg dated June 16, 1946, describes the following quartz veins:

Vein #2, #2 lens	460' x 2.5' @ \$8.25
	(0.24 oz. gold/s. ton)
#1 lens	700' x 2.5' @ \$9.35
	(0.267 oz. gold/s. ton)

Vein #5	340' x 1.5' @ \$36.86
	(0.91 oz. gold/s. ton)

In addition, he indicates that the best hole in Zone #3, a cherty sulphide zone, intersected 25 feet with values from 0.06 to 0.30 oz. gold/s. ton.

Estimates of ore reserves by Julius M. Cohen in 1949 were 45,000 tons grading 0.22 oz. gold/s. ton.

Quartz veins on the property strike either east and west or north and south. Like the veins on the Brown McDade property, they are very close to the quartz diorite contact or within the quartz diorite. The #3 zone is a tuff zone up to 60 feet wide with bands of pyrite, lesser pyrrhotite, minor sphalerite, and traces of chalcopyrite (Timmins resident geologist file T10).

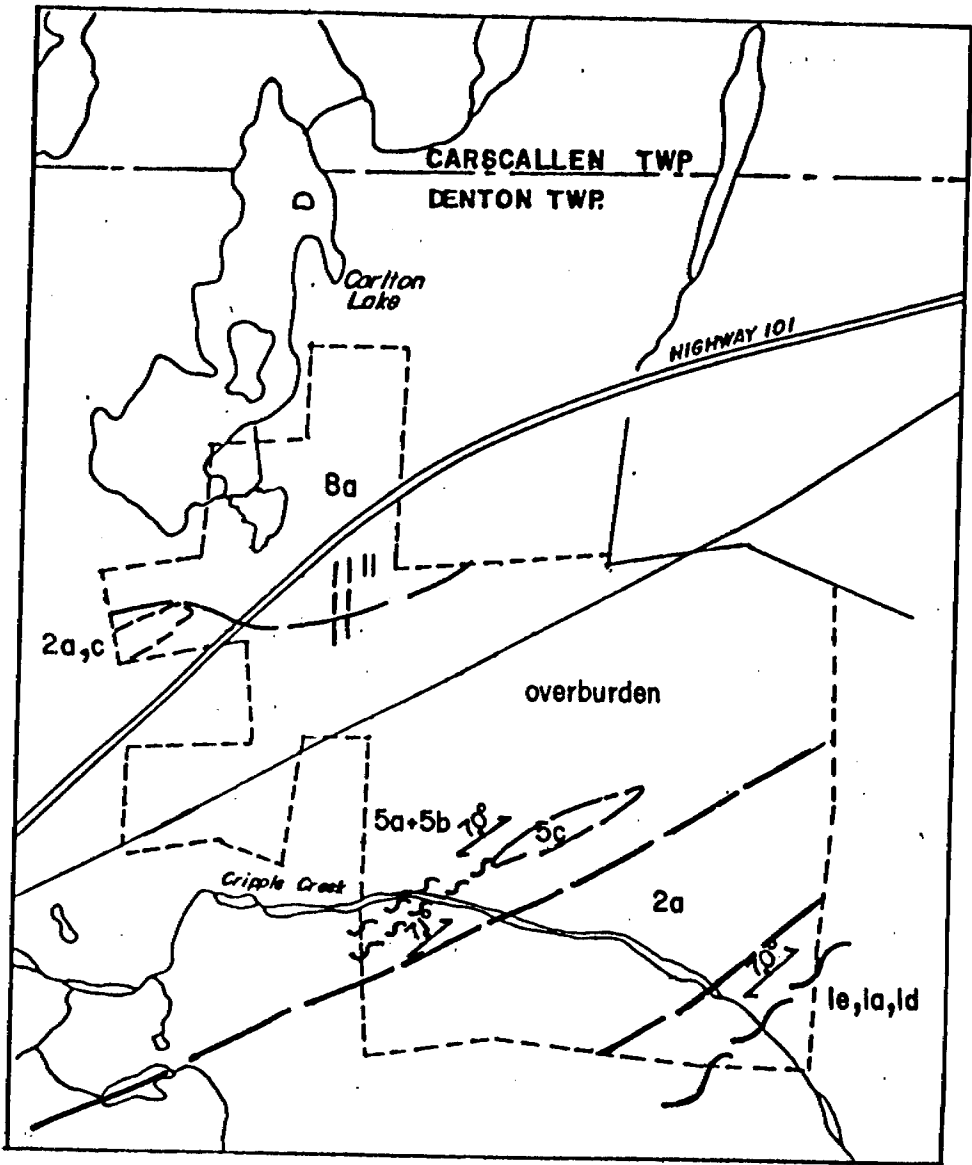
Speculator's Guild Inc. is the present holder of the Aumo property and surrounding claims. During 1979, magnetic and VLF electromagnetic surveys were completed on this property. VLF data were presented as a Fraser Plot. A report by P.T. George dated 79/11 recommends drilling a

number of anomalies, particularly several weak ones trending in a northerly direction in the approximate area of the quartz diorite contact. This survey proves that known gold-bearing shear zones with quartz veins and pyrite are detected by VLF electromagnetic instruments.

11. Gowest Gold Resources Ltd. presently holds claims adjoining east of the Golden Range Resources claims. Repeated exploration and drilling there indicates a 400 foot long zone averaging 5.1 feet wide with 0.28 oz. gold/s. ton in an altered ultra-basic horizon (Timmins resident geologist file T1865).
12. To the west of the Golden Range Resources claims, prospecting and drilling, mainly prior to 1940, has located several gold prospects in sediments. Research by the writer has not succeeded in locating good information about these prospects. They appear to be described as "shear zones in sediments" in original documents quoted by George (1980). More specific information would assist exploration of the Golden Range Resources property.

#### REGIONAL GEOLOGY

Denton Township is situated near the western end of the Abitibi greenstone belt and is underlain by Early Precambrian (Archean) supracrustal rocks of volcanic and sedimentary origin.



DIKE

11 Diabase

INTRUSIVE

8a Quartz Diorite  
 5a Phyllite, Quartz carbonatized Sericite Schist  
 5b Chloritic Carbonatized Schist

CHEMICAL METASEDIMENTS

5c Sulphide Iron Formation (float)

MAFIC to INTERMEDIATE METAVOLCANICS

2a Massive Basalt Flow  
 2c Tuff Breccia

ULTRAMAFIC to MAFIC METAVOLCANICS

1a Massive Flows (silicified-carbonatized)  
 1d Serpentinized Peridotite (komatiitic)  
 1e Talcose Carbonate Schist

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.	
	for	GOLDEN RANGE RESOURCES
	Title	GENERAL GEOLOGY MAP
		FIG. 3
	Date: Sept. 1984	Scale: 1" = 1/2 mi. N.T.S.:
	Drawn: C.G.	Approved: File: M-72



The supracrustal rocks have been intruded by Archean felsic and mafic intrusives. The plutonic rocks, which underlie roughly half of the township, are situated in the northwest corner, extreme southwest corner, southcentral and southeast portions of the township. These rocks are mainly tonalite, granodiorite porphyritic granodiorite and granite.

The youngest rocks are roughly north-trending diabase dikes, that may possibly occupy pre-existing faults. The dikes are believed to be of middle precambrian age. The next youngest rocks are believed to be the felsic intrusives. These felsic plutonic rocks have been interpreted by A.Choudry to be of three different ages. In detail the youngest is a pink coloured medium-grained granodiorite situated in the extreme south central portion of the township. The next youngest felsic intrusive is a pink porphyritic granodiorite with up to 3 cm long K-feldspar crystals, located in the south central portion of the township immediately north of the younger intrusive. The oldest felsic intrusives are pink to grey foliated to gneissic quartz diorite, tonalite and quartz monzonite which are situated in the northwestern and southwestern portion of the township and in the northwestern portion of the Golden Range property. The stratigraphic units used in this report are based on those used by A. Choudry (1982)<sup>2</sup> composed of isoclinally folded supracrustal rocks folded about a roughly east-northeast-trending synclinal

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<sup>2</sup>1982: Precambrian Geology of Denton Township, Cochrane District; Ontario Geological Survey, Map. 2501, Geological Series - Preliminary Map, Scale 1:15840 or 1" to 1/4 mile

axis situated near the centre of the township along the Denton-Thorneloe boundary. This syncline is thought to plunge steeply to the east.

The youngest metavolcanics or metasediments, according to A.Choudry,<sup>3</sup> are the Porcupine group metasediments. They are located in the east central portion of the township. They are believed to be time equivalent to the lower to middle volcanic formation of the Tisdale Group. They include mudstones, phyllites, wackes and lithic wackes. Proceeding from youngest to oldest, the sediments are followed by the lower volcanic formation of the Tisdale Group. This formation includes peridotitic and basaltic komatiites at the base and Mg - tholeiitic basalts interlayered with komatiites in the upper part. These rocks may in fact, underlie the most southern portion of the Golden Range Resources proerty. The upper volcanic formation of the Deloro Group is the second oldest formation found in Denton township. This unit is typified by the abundance of iron formation, including both oxide and sulphide facies, in calc-alkalic rhyolitic to dacitic pyroclastics. This unit appears to be fairly similar to the upper volcanic formation of the Tisdale Group which has lean, cherty, sulphide facies iron formation in felsic pyroclastics. This formation may, in fact,

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<sup>3</sup>

Ibid page 12

underlie the upper three quarters of the Golden Range property, the contact of which is within a shear zone. The oldest formation present in Denton Township is the middle volcanic formation of the Deloro Group. This formation is typified by calc-alkalic flows of andesitic to basaltic composition. Pyroclastics are generally confined to the upper part of this formation. Ultramafic intrusive rocks are found within this formation.

There are two main directions of shearing in Denton Township. The first is the north-northwest trending faults possibly of two separate ages. These faults displace both lithological units and the older east-northeast trending faults and associated shears. The only evidence on the Golden Range property of these north trending faults was seen just west of claim 622800 in a narrow shear zone within a tuff breccia (Unit 2c). Associated quartz veins contained up to 25% pyrite, 4% sphalerite and up to 3% arsenopyrite. The older more major east trending fault zones in Denton Township include the Destor-Porcupine, the Bristol and Thorneloe Fault Zones and the McCoshen Shear Zone.

The Destor-Porcupine Fault is closely associated with gold deposits in the area. The fault has been traced to within two miles of the Denton claims, where it is lost in overburden. The projection of this fault coincides roughly with the position of

Highway 101 across the northeast part of the claims. No evidence of this fault was seen on the Golden Range property due to thick overburden.

The estimated location of the Bristol fault is based solely on geomagnetic interpretation as the fault is not exposed. The geomagnetic anomaly originates in Bristol township and strikes west southwest. The fault strikes N70°E and dips north at 60°. The Bristol fault is thought to be offset sinistrally by a young northwest trending fault near Mahoney Creek shifting the Bristol fault southward into Denton township. From here it is thought that the fault extends west-southwest across the Golden Range property. "Both the magnetic and the electromagnetic (VLF) survey completed by Mid-Canada exploration shows a possible existence of the Bristol Fault Zone around line 0 and line 20W at 1000'N and 875' north. From here the fault is thought to follow Cripple Creek and then enters Denton Lake which appears to be strongly related to a fault lineament."<sup>4</sup>

A second major west southwest trending fault zone, the Thorneloe Fault Zone, consisting of a series of parallel shears, is thought to cross the north part of Denton township. Possible indications of this fault are seen in the extreme southeastern corner of the Golden Range property within claim 624133 as intensely carbonatized, weakly sheared mafic to ultramafic volcanic rock.

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<sup>4</sup> Geomagnetic and Geological Surveys of Denton # 1-80 Group of Hollinger Argus Ltd., J.E. Mountjoy, 1983.

A third major west southwest shear zone called the McCoshen Shear Zone is thought to cut the southwestern corner of the Golden Range property. Highly schistose, sericitic sections with quartz carbonate veining and slickensided surfaces are thought to correspond with the McCoshen Shear zone.

#### PROPERTY GEOLOGY

The Golden Range Resources property is underlain, in part, by a felsic intrusive complex in the northwestern corner of the property, peridotitic and basaltic komatiites, sulfide facies iron formation and sheared quartz-sericite-carbonate schists and chlorite-carbonate schists throughout the remainder of the property. Table 1 lists the units found on the property.

The felsic intrusive complex is thought to be Early Precambrian in age and is composed of a quartz-rich tonalite and quartz diorite. Diabase dikes locally intrude the felsic rocks.

1. TABLE OF FORMATIONS

11 Equigranular Diabase

Intrusive

8a Quartz Diorite

Intrusive

5a Phyllite, Quartz-Sericite-Carbonatized Schist

5b Chlorite-carbonate Schist

Chemical Metasediments

5c Sulphidic Chert Iron Formation

Mafic to Intermediate Metavolcanic

2a Massive Andesitic to Basaltic Flow

2c Tuff Breccia

Ultramafic to Mafic Metavolcanic

1a Massive Flows or Intrusions (silicified and carbonatized)

1d Serpentinized-Talcose Peridotite (Komatiitic)

Unit 11. Equigranular Diabase

A diabase dike is seen cutting the felsic intrusive rocks in the northwest corner of the property. The dike trends northerly and outcrops just west of line 12W at 2400' north where the line crosses Highway 101. The dike is approximately 10 feet wide and is chilled against the felsic intrusive rocks (Unit 8a). The dike is reddish-brown on weathered surface and black on fresh, is

medium to coarse-grained and magnetic. Light green sericitized plagioclase comprises approximately 20% of the rock, and locally, portrays a glomeroporphyritic texture.

Unit 8a. Quartz Diorite

The quartz diorite is an equigranular, massive, light grey to white rock with 5% to 15% black amphibole and/or dark green chlorite. The quartz-rich phase generally contains 20% to 30% clear quartz phenocrysts and less mafic minerals with 60 to 65% light greenish sericitized plagioclase crystals.

It is assumed, by some, that the Destor-Porcupine fault is or was close to the lower quartz-diorite (Unit 8a) contact on the northwest part of the Golden Range property.

Unit 5a. Phyllite, Quartz-Sericite-Carbonate Schist

In the southwestern corner of the property in claim 624121, a siliceous, schistose, sericitic, carbonate schist outcrops. The rocks in this area are significantly sheared indicative of a major shear zone. The rocks are buff white to beige to red brown on weathered surfaces and are light grey-pale green on fresh surfaces. A strong schistosity of 065/71° to the north locally hosts from trace to 1% disseminated pyrite. The schistosity imparted by the abundant development of sericite, causes a fissility to the rocks that imparts a rusty stain to the weathered surface. Weak to intense quartz-calcite stringers occur, often times giving the host rock a brecciated appearance.

The rock contains up to 10% white carbonate. It is thought, by the authors, that these rocks are sheared, felsic to intermediate calc-alkalic rocks or sheared metasediments.

Unit 5b. Chlorite - Carbonate Schist

Also outcropping in the southwestern corner of the property within claim 624121, is a chloritic, moderately carbonatized schist interbedded with Unit 5a. The rock, also, is strongly schistose with smooth slickensided surfaces. Carbonate forms from 5-15% of the rock with the local developmet of disseminated pyrite (less than 1%) along the schistosity.

Chemical Metasediments

Unit 5c. Sulphidic Chert Iron Formation

This unit occurs as angular float (flyrock) in the vicinity of an old trench in claim 622800. The rock is comprised of light blue to light grey chert with a white weathering surface. The chert appeared to be somewhat recrystallized i.e. granular. A lense of massive pyrite (30%) occurred within the iron formation averaging 2" in thickness.

Mafic to Intermediate Metavolcanics

Unit 2a. Massive Andesitic to Basalt Flow

This unit outcrops on TL13N at 38+40W on the extreme western edge of the property. The rock is a dark grey-green basalt,



massive and fine grained and contains trace to 1/2% disseminated pyrite.

Unit 2c. Tuff Breccia

This unit occurs in the same vicinity as the above basalt unit and has a poorly defined contact with the basalt. The rock is made up of 50% matrix and 50% fragments. The matrix is dark grey-green, often showing coarse grained hornblende crystals and feldspar laths. The fragments are subangular to subrounded, white-grey and felsic in composition. Fragment size averages 2 inches across and ranges from less than one inch to up to 12 inches.

Ultramafic to Mafic Metavolcanic

Unit 1a. Massive Flows or Intrusions (silicified and carbonatized)

This unit outcrops on Line 52E in the vicinity of 34+00S, within claim 624133, in the southeastern corner of the property. This unit is probably a highly altered unit 1d, Komatiitic peridotite. The rock is variably light to dark grey, grey-orange coloured, and weathers orange-grey due to the weathering of carbonates. Up to 60% of the rock is made up of carbonate minerals, including mainly magnesite, with lesser amounts of ankerite, siderite, dolomite and calcite. The rest of the rock consists of talc, chlorite, quartz, serpentine and 1-2% sulphides.

Outcrops of this unit are mainly massive, but in several locations, a strong foliation exists, which may represent a shear zone that was the locus of the carbonate-silica alteration of the ultramafic host.(see Area - 2 description).

Unit 1d. Serpentinized - Talcose Komatiitic Peridotite

this unit outcrops on L52E at 26+80S in the southeastern corner of the property on claim P624133. The rock is light grey-green, and weathers an orange-grey colour due to a slight carbonatization. Outcrops are massive to poorly foliated. The rock consists of talc, chlorite, serpentine and pyroxene.

STRUCTURAL GEOLOGY (faulting and Shearing)

As previously discussed in the Regional Geology section of this report, the Destor-Porcupine Fault projection coincides roughly with the position of Highway 101 across the northeast part of the claims. No evidence of this fault was seen on the Golden Range property due to thick overburden cover.

The Thorneloe Fault Zone has been interpreted to pass through the most southeastern corner of the Golden Range property in claim 624133. The fault has intensely carbonatized and sheared the ultramafics and mafic volcanics in this locality. A weak electromagnetic anomaly occurs just north of Line 52E at 3400'S where outcrops of highly carbonatized talc-chlorite-schists have been encountered. Other outcrops seen

in old 1930 trenches (see Area 2 discussion) have been completely altered to carbonate. The intense degree of alteration exhibited by these outcrops is believed to be more evidence of a major fault zone, and it is believed by the authors that the rocks in this area were originally ultramafic in composition.

The second shear zone, named prior to 1945, as the McCoshen Shear zone, is located on Line 0 and Line 4E between 1825S and 1925S in claim 624121. This shear zone has highly schistose sections at 065/71°N and contains up to 10% quartz-carbonate veining and from 2-5% disseminated pyrite. Using the geophysical survey carried out by Mid-Canada personnel, the McCoshen shear has been interpreted to continue east along Cripple Creek indicated by both fair and weak electromagnetic (VLF) anomalies. This shear has been interpreted to correlate with outcrops of highly schistose quartz-sericite-carbonate schist mapped near Line 0E and Line 4E just south of Cripple Creek.

Lastly, a fourth east-northeasterly trending fault called the Bristol Fault may be present on the Golden Range property. "The magnetic survey completed by Mid-Canada Exploration Services, shows little evidence of the Bristol Fault; however; a very small low on Line 12W at 950'N could be representative of the fault. The electromagnetic (VLF) survey unfortunately fails to clearly outline the fault; however, crossovers on Line 0 and 20W at 1000' north and 875' north respectively may, in fact, be

related to the Bristol Fault."

#### ECONOMIC GEOLOGY

A total of 23 grab samples were collected from the property and were analyzed for gold, arsenic, and in some cases copper, zinc (see Table 2 for summary of sample location, rock descriptions and sample numbers). The results are included in the Appendices at the back of this report.

Four areas of interest were located on the property. These include three previously trenched quartz vein bearing zones and a slightly pyritiferous shear zone located in outcrop, apparently previously untrenched.

#### AREA 1 (see Figure 4)

A ten to twenty foot wide shear trending at 065° Az dipping steeply to the north occurs on the south side of Cripple Creek in the southwestern corner of the property. The zone is composed of a quartz-sericite schist and an intensely schistose quartz-chlorite-carbonate schist with from trace to 1% disseminated pyrite. The rock is thought to have been calc-alkalic in composition previous to shearing. The major northeast trending schistosity, imparted by the abundant development of sericite, causes a strong fissility to the rocks. The area contains from 5% to 15% quartz-carbonate veining that,

in some places, has brecciated the host rock. A total of five rock grab samples were taken from this area (see Table 2).

AREA 2 (see Figure 4 Area-2 map 1"=25')

In the southeast corner of the property, on claim P624133, an area of intensely carbonatized, moderately silicified ultramafic rock was found. This area, which is at least 150 feet wide, is in the vicinity of Line 52E at 33+75 south to 35+50 south. The area has been worked in the past, including 9 trenches and 3 test pits. The trenches and pits, however, are very old (circa 1930's?) and are largely caved, exposing only broken wall rock material rather than true outcrop. It would seem that the trenching was trying to follow the quartz and quartz-carbonate veins that occur within the altered ultramafics.

The ultramafic rock was probably a komatiitic flow that is now intensely carbonatized. Carbonate minerals include magnesite, ankerite, siderite, minor dolomite and minor calcite. Up to 60% of the rock is now composed of carbonates, with the remainder being talc, chlorite, serpentine, quartz and minor sulphides. Outcrops are variably massive to strongly foliated (banded) at approximately 065° dipping 70° towards the northeast. Where the rock is foliated (banded), the carbonates and quartz occur together as thin (1-10mm) stringers parallel to the foliation. The more foliated or banded outcrops, as traced, occupy a zone entirely enclosed within the more massive rock. This more foliated zone may represent a shear zone that was the

locus of the carbonate-silica alteration of the ultramafics.

In the most eastern trenches, quartz and quartz-carbonate veins have been uncovered, but due to the poor condition of the trenches, vein dimensions and orientations are uncertain. (Almost 15 feet of the most eastern trench is quartz-carbonate vein material but this may be along strike).

Sulphide mineralization was seen mainly in, but not restricted to, the more foliated carbonatized ultramafics. No more than 1-2% total sulphides were seen in any one area. Sulphides observed include pyrite, sphalerite, and chalcopryrite (together with malachite).

A total of 4 samples of mineralized and/or altered rock were collected from Area-2 and were geochemically analyzed for gold, arsenic + copper and zinc. (see Table 2)

#### AREA 3 (see Figure 4)

In area 3, a series of trenches was located in the central portion of claim 624127. These trenches occur both along and across the strike of several major quartz-carbonate veins. The area has been worked in the past, including 6 trenches. The trenches, however, are very old (circa 1930's) and are heavily overburden covered. A total of 6 grab samples were taken of the quartz-calcite veins and of the intensely silicified, carbonatized intermediate to mafic metavolcanics. Mineralization included trace amounts of disseminated pyrite and chalcopryrite.

AREA 4 (see Figure 4)

In the southwestern corner of claim P-622800, on the north western edge of the property, as well as just west of the property boundary, outcrops are exposed showing pyrite, arsenopyrite and sphalerite mineralization.

The sulphides occur within a quartz vein that follows a very narrow shear zone. This narrow zone has been exposed for 30 feet, in the past by power stripping. The vein pinches and swells between 8 inches and 2 feet and trends 003°, dipping 80° towards the east. Vein selvages are highly sheared, silicified and sericitized and contain trace to 1% pyrite and much limonite. The vein itself is white to grey quartz, containing 5-25% pyrite, trace to 3% arsenopyrite and trace to 4% sphalerite. The sulphides occur in a semi-banded orientation, parallel to the vein. Wallrock of the vein/shear is Unit (2c), Tuff Breccia. This rock has a mafic (predominantly hornblende and chlorite) matrix hosting white felsic fragments. Forty feet north of the showing the mafic Tuff Breccia is in contact with a quartz diorite intrusion. It is probable that the vein terminates at that contact. Two samples were collected of flyrock where the vein was stripped and were geochemically analyzed for Au, As, Zn. The samples are listed in Table 2.

These four sulphide bearing zones appear to be the result of shearing within peridotitic to basaltic, and calcalkalic rocks. Locally unaltered mafic to ultramafic portions are present.

TABLE 2            Description and Location of Rock Samples

NA....Indicates not analyzed for Cu or Zn.  
Analysis Results in the Appendix at the back of this report.

SAMPLE No.	ROCK TYPE/DESCRIPTION	LOCATION	Au ppb	As	Cu	Zn
31001	sheared, strongly schistose, sericitic, siliceous schist (Unit 5a)	L0E at 25' east of 1890S Area 1			N/A	N/A
31002	2 1/2" wide bull quartz calcite vein with trace coarse pyrite along vein selvages within a sheared schistose schist (Unit 5a)	L0E at 5' east of 1850S Area 1				
31003	siliceous, schistose, sericitic chloritic schist, calcite along fractures (Unit 5b)	L0E at 50' east of 1945S Area 1			N/A	N/A
31004	Gossanous, siliceous chloritic schist with trace to 1% disseminated pyrite. (Unit 5b)	L0E at 40' east of 1910S (Unit 5b)			N/A	N/A
31005	Brecciated quartz-calcite vein up to 10% red-brown carbonate within sheared sericitic schist (Unit 5a)	L0E at 55' east of 1960S			N/A	N/A
31006	Sericitic, phyllitic, sheared schist (Unit 5a)	L4E at 1900S			N/A	N/A
31007	chloritic-carbonate-schist	L40E at 7+50N			N/A	N/A



TABLE 2 Description and Location of Rock Samples  
(continued)

NA....Indicates not analyzed for Cu or Zn.  
Analysis Results in the Appendix at the back of this report.

SAMPLE No.	ROCK TYPE/DESCRIPTION	LOCATION	Au ppb	As	Cu	Zn
31008	grey-blue chert with 2" massive pyrite seams (sulphide iron formation Unit 4c)	L20E at 1580S			N/A	N/A
31009	Quartz vein with carbonate, trace pyrite, chalcopyrite within carbonatized ultramafic (Unit 1d)	L52E at 87' east				
31010	Carbonatized ultramafic with quartz veining (Unit 1d)	L52E at 110' east of 3420S			N/A	N/A
31011	Highly silicified, carbonatized banded mafic-ultramafic rock.	L52E at 15' east of 3412S			N/A	
31012	Silicified, carbonatized mafic to untramafic rock	L52E at 20' west of 3450S			N/A	N/A
31013	Quartz vein with trace chalcopyrite and up to 25% pyrite, 10% disseminated arsenopyrite within sheared tuff breccia (Unit 2)	TL13N at 3930'W	2500			
31014	Quartz vein in shear zone zone with 10-15% pyrite, 5% red sphalerite (banded)	TL13N at 3931'W	2500		N/A	
31015	Silicified, carbonatized mafic to intermediate volcanic (Unit 2a)	L32E at 1950S			N/A	N/A
31016	Slightly foliated weakly carbed mafic volcanic (Unit 2a)	L32E at 25' east of 1950S			N/A	N/A

TABLE 2 Description and Location of Rock Samples  
(continued)

NA....Indicates not analyzed for Cu or Zn.

Analysis Results in the Appendix at the back of this report.

SAMPLE No.	ROCK TYPE/DESCRIPTION	LOCATION	Au ppb	As	Cu	Zn
31017	4" wide smoky grey quartz vein	L32E at 25' east of 1950S			N/A	N/A
31018	Silicified, carbonatized mafic.	L32E at 25' east of 1965S			N/A	N/A
31019	Silicified mafic to intermediate volcanic (Unit 2a) cut by quartz veins	L32E at 25' east of 1987S			N/A	N/A
31020	6" wide quartz vein within silicified mafic volcanic (Unit 2a)	L32E at 25' west of 2050S			N/A	N/A
31021	Silicified, carbonatized mafic to intermediate volcanic with trace pyrite and chalcopyrite	L32E at 5' east of 2050S			N/A	N/A
31022	silicified, carbonatized mafic volcanic cut by 1' quartz veins	L32E at 35' east of 2050S			N/A	N/A
31023	Intense quartz-calcite stringers within silicified, carbonatized mafic volcanic (Unit 2a)	L32E at 30' east of 20+25S			N/A	N/A

CONCLUSIONS AND RECOMMENDATIONS

1. Mineralization within the Golden Range Resources property appears to be controlled by shearing and related quartz veining in the calcalkalic and mafic to ultramafic volcanic rocks.
2. The occurrence of disseminated pyrite, chalcopyrite,

sphalerite and arsenopyrite in these shear zones and veins, indicates that these mineralized zones could be traced by an induced polarization survey.

3. An IP survey is recommended along the present grid system. This IP survey would outline more precisely zones of mineralization on the property associated with the Thorneloe Fault and the McCoshen Shear.

4. Bulldozer power stripping to bedrock along with detail mapping and sampling of the exposed outcrops is recommended along anomalies outlined by the proposed IP survey and along the predicted fault and shear zones located in the field.

Respectfully Submitted,

*Nadia Caira*  
Nadia Caira, B.Sc.

August 30, 1984

*Ian Coster*  
Ian Coster, B.Sc.

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CERTIFICATION

I, Nadia M. Cairra, B.Sc., of Timmins, Ontario, certify that:

1. I am a graduate of the University of British Columbia, Vancouver, B.C., with a B.Sc. degree in Geology obtained in 1981.
2. I have been practising my profession in Canada since 1981.
3. I have no direct or indirect interest in the properties, leases or securities of Golden Range Resources Incorporated, Denton Township property, nor do I expect to receive any.

Dated this August 30, 1984, Timmins, Ontario.

*Nadia Cairra*  
Nadia M. Cairra, B.Sc.

CERTIFICATION

I, IAN P.D.A. COSTER, B.Sc., of Timmins, Ontario, certify  
that:

- 1) I am a graduate of the University of British Columbia, Vancouver, B.C., with a B.Sc. degree in Geology obtained in 1981.
- 2) I have been practising my profession in Canada since 1981.
- 3) I have no direct or indirect interest in the properties, leases or securities of Golden Range Resources Incorporated, Denton Township property, nor do I expect to receive any.

Dated this August 30, 1984, Timmins, Ontario.

A handwritten signature in black ink, appearing to read 'Ian Coster', with a horizontal line drawn underneath it.

IAN P.D.A. COSTER, B.Sc.

A P P E N D I X



# BELL - WHITE ANALYTICAL LABORATORIES LTD.

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HAILEYBURY, ONTARIO

TEL: 672-3107

## Certificate of Analysis

NO. B872-84

DATE: August 13, 1984

SAMPLE(S) OF: Rock(23)

RECEIVED: August, 1984

SAMPLE(S) FROM: R. S. Middleton Exploration Services

### Project No. M-72

<u>Sample No.</u>	<u>Oz. Gold</u>	<u>Gold ppb</u>
G31001		2
2		3
3		2
4		2
5		3
6		2
7		2
8		2
9		3
G31010		4
1		3
2		3
3	0.090	2804
4	0.092	2917
5		7
6		2
7		7
8		4
9		2
G31020		3
1		2
2		3
3		2

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

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TEL: 672-3107

## Certificate of Analysis

NO. B866-84

DATE: August 10, 1984

SAMPLE(S) OF: Rock (23)

RECEIVED: August, 1984

SAMPLE(S) FROM: R. S. Middleton Exploration Services

Project #M-72

<u>Sample No.</u>	<u>Arsenic/ppm</u>
31001	10
2	10
3	15
4	30
5	5
6	150
7	N.D.
8	80
9	25
31010	25
1	20
2	300
3	450
4	600
5	N.D.
6	N.D.
7	25
8	5
9	25
31020	5
1	5
2	5
3	30

N.B.: N.D. denotes "Not Detected"

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER 



BELL - WHITE ANALYTICAL LABORATORIES LTD.

P.O. BOX 187,

HAILEYBURY, ONTARIO

TEL: 672-3107

## Certificate of Analysis

NO. B878-84

DATE: August 14, 1984

SAMPLE(S) OF: Rock (7)

RECEIVED: August, 1984

SAMPLE(S) FROM: R. S. Middleton Exploration Services

Project #M-72

<u>Sample No.</u>	<u>Copper/ppm</u>	<u>Zinc/ppm</u>
31002	126	73
31009	770	18
31011		1225
31013	124	194
31014		2405
31020	88	53
31021	118	52

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.





GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL  
TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT  
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT  
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) GEOLOGICAL  
Township or Area DENTON  
Claim Holder(s) GOLDEN RANGE RESOURCES  
INCORPORATED  
Survey Company R.S. MIDDLETON EXPLORATION SERV. INC.  
Author of Report IAN COSTER & NADIA CAIRA  
Address of Author P.O. BOX 1637 TIMMINS, ONT.  
Covering Dates of Survey 28/07/84 -> 8/08/84  
(linecutting to office)  
Total Miles of Line Cut \_\_\_\_\_

MINING CLAIMS TRAVERSED	
List numerically	
(prefix)	(number)
P6225652	P6224119
" 653	" 120
" 654	" 121
P622800	" 122
" 801	" 123
" 802	" 124
" 803	" 125
" 804	" 126
" 805	" 127
" 806	" 128
" 807	" 129
" 808	" 130
" 809	" 131
" 810	" 132
" 811	" 133
TOTAL CLAIMS <u>30</u>	

If space insufficient, attach list

SPECIAL PROVISIONS CREDITS REQUESTED	DAYS per claim
Geophysical	
-Electromagnetic _____	
-Magnetometer _____	
-Radiometric _____	
-Other _____	
Geological <u>20</u>	
Geochemical _____	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)  
Magnetometer \_\_\_\_\_ Electromagnetic \_\_\_\_\_ Radiometric \_\_\_\_\_  
(enter days per claim)

DATE: OCT. 3/84 SIGNATURE: [Signature]  
Author of Report or Agent

Res. Geol. \_\_\_\_\_ Qualifications \_\_\_\_\_

Previous Surveys			
File No.	Type	Date	Claim Holder

OFFICE USE ONLY



W.R. 329



42A055E0139 2.7298 DENTON

900

2  
Minin

Type of Survey(s) **GEOLOGICAL-GEOLOGICAL** Township or Area **DENTON TWP (4-273)**

Claim Holder(s) **GOLDEN RANGE RESOURCES INC** Prospector's Licence No. **T-1324**

Address **189 PRESTON ST. TIMMINS, ONT. PAN 3N4**

Survey Company **ROBERT S. MIDDLETON EXPLORATION SERVICES INC.** Date of Survey (from & to) **26 07 84 10 08 84** Total Miles of line Cut **30.75**

Name and Address of Author (of Geo-Technical report) **IAN COSTER, NADIA CAIRA, P.O. BOX 1637 TIMMINS, ONT. PAN 7W8**

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	20
	- Magnetometer	
	- Radiometric	
	- Other	
For each additional survey: using the same grid: Enter 20 days (for each)	Geological	20
	Geochemical	

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	Other	
	Geological	
	Geochemical	

Airborne Credits	Geophysical	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	- Electromagnetic	
	- Magnetometer	
	- Radiometric	

RECEIVED

AUG 21 1984

MINING LANDS SECTION

Mining Claims Traversed (List in numerical sequence)

Prefix	Mining Claim Number	Expend. Days Cr.	Prefix	Mining Claim Number	Expend. Days Cr.
P	725652		P	624127	
	725653			624128	
	725654			624129	
	622800			624130	
	622801			624131	
	622802			624132	
	622803			624133	
	622804				
	622805				
	622806				
	622807				
	622808				
	622809				
	622810				
	622811				
	624119				
	624120				
	624121				
	624122				
	624123				
	624124				
	624125				
	624126				

RECORDED  
1 AUG 16 1984  
Receipt No. R.h.

Expenditures (excludes power striping)

Type of Work Performed **FORCUPINE MINING DIVISION**

Performed on Claim(s) **10 1984 P.M.**

Calculation of Expenditure Days

Total Expenditure **718.91** ÷ **15** = **47.93**

Instructions  
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

RECEIVED  
AUG 10 1984 P.M.

For Office Use Only

Total Days Cr. Recorded **1200** Date Recorded **Aug. 16/84** Mining Recorder **[Signature]**

Date Approved as Recorded **Aug. 16/84** Branch Director **[Signature]**

Date **AUG. 7/84** Recorded Holder or Agent (Signature) **[Signature]**

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying **IAN COSTER, P.O. BOX 1637 TIMMINS, ONT. PAN 7W8**

Date Certified **AUG. 6/84** Certified by (Signature) **[Signature]**



**GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL  
TECHNICAL DATA STATEMENT**

**TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT  
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT  
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.**

Type of Survey(s) GEOLOGICAL  
 Township or Area DENTON  
 Claim Holder(s) GOLDEN RANGE RESOURCES  
INCORPORATED  
 Survey Company R.S. MIDDLETON EXPLORATION SERV. INC.  
 Author of Report IAN COOPER & NADIA CAIRA  
 Address of Author P.O. BOX 1637 TIMMINS, ONT.  
 Covering Dates of Survey 28/07/84 → 8/08/84  
 (linecutting to office)  
 Total Miles of Line Cut \_\_\_\_\_

MINING CLAIMS TRAVERSED List numerically	
(prefix)	(number)
P725652	P624119
" 653	" 120
" 654	" 121
P622800	" 122
" 801	" 123
" 802	" 124
" 803	" 125
" 804	" 126
" 805	" 127
" 806	" 128
" 807	" 129
" 808	" 130
" 809	" 131
" 810	" 132
" 811	" 133
<b>TOTAL CLAIMS</b> <u>30</u>	

If space insufficient, attach list

<u>SPECIAL PROVISIONS CREDITS REQUESTED</u>	Geophysical	DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	-Electromagnetic _____	
ENTER 20 days for each additional survey using same grid.	-Magnetometer _____	
	-Radiometric _____	
	-Other _____	
	Geological <u>20</u>	
	Geochemical _____	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)  
 Magnetometer \_\_\_\_\_ Electromagnetic \_\_\_\_\_ Radiometric \_\_\_\_\_  
 (enter days per claim)

DATE: OCT. 3/84 SIGNATURE: [Signature]  
 Author of Report or Agent

Res. Geol. \_\_\_\_\_ Qualifications \_\_\_\_\_

Previous Surveys

File No.	Type	Date	Claim Holder

OFFICE USE ONLY

**GEOPHYSICAL TECHNICAL DATA**

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations \_\_\_\_\_ Number of Readings \_\_\_\_\_

Station interval \_\_\_\_\_ Line spacing \_\_\_\_\_

Profile scale \_\_\_\_\_

Contour interval \_\_\_\_\_

**MAGNETIC**

Instrument \_\_\_\_\_

Accuracy - Scale constant \_\_\_\_\_

Diurnal correction method \_\_\_\_\_

Base Station check-in interval (hours) \_\_\_\_\_

Base Station location and value \_\_\_\_\_

**ELECTROMAGNETIC**

Instrument \_\_\_\_\_

Coil configuration \_\_\_\_\_

Coil separation \_\_\_\_\_

Accuracy \_\_\_\_\_

Method:  Fixed transmitter  Shoot back  In line  Parallel line

Frequency \_\_\_\_\_  
(specify V.L.F. station)

Parameters measured \_\_\_\_\_

**GRAVITY**

Instrument \_\_\_\_\_

Scale constant \_\_\_\_\_

Corrections made \_\_\_\_\_

Base station value and location \_\_\_\_\_

Elevation accuracy \_\_\_\_\_

**INDUCED POLARIZATION  
RESISTIVITY**

Instrument \_\_\_\_\_

Method  Time Domain  Frequency Domain

Parameters - On time \_\_\_\_\_ Frequency \_\_\_\_\_

- Off time \_\_\_\_\_ Range \_\_\_\_\_

- Delay time \_\_\_\_\_

- Integration time \_\_\_\_\_

Power \_\_\_\_\_

Electrode array \_\_\_\_\_

Electrode spacing \_\_\_\_\_

Type of electrode \_\_\_\_\_

SELF POTENTIAL

Instrument \_\_\_\_\_ Range \_\_\_\_\_

Survey Method \_\_\_\_\_

Corrections made \_\_\_\_\_

RADIOMETRIC

Instrument \_\_\_\_\_

Values measured \_\_\_\_\_

Energy windows (levels) \_\_\_\_\_

Height of instrument \_\_\_\_\_ Background Count \_\_\_\_\_

Size of detector \_\_\_\_\_

Overburden \_\_\_\_\_  
(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey \_\_\_\_\_

Instrument \_\_\_\_\_

Accuracy \_\_\_\_\_

Parameters measured \_\_\_\_\_

Additional information (for understanding results) \_\_\_\_\_

AIRBORNE SURVEYS

Type of survey(s) \_\_\_\_\_

Instrument(s) \_\_\_\_\_  
(specify for each type of survey)

Accuracy \_\_\_\_\_  
(specify for each type of survey)

Aircraft used \_\_\_\_\_

Sensor altitude \_\_\_\_\_

Navigation and flight path recovery method \_\_\_\_\_

Aircraft altitude \_\_\_\_\_ Line Spacing \_\_\_\_\_

Miles flown over total area \_\_\_\_\_ Over claims only \_\_\_\_\_

GEOCHEMICAL SURVEY – PROCEDURE RECORD



Numbers of claims from which samples taken \_\_\_\_\_

Total Number of Samples \_\_\_\_\_

Type of Sample \_\_\_\_\_  
(Nature of Material)

Average Sample Weight \_\_\_\_\_

Method of Collection \_\_\_\_\_

Soil Horizon Sampled \_\_\_\_\_

Horizon Development \_\_\_\_\_

Sample Depth \_\_\_\_\_

Terrain \_\_\_\_\_

Drainage Development \_\_\_\_\_

Estimated Range of Overburden Thickness \_\_\_\_\_

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis \_\_\_\_\_

General \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ANALYTICAL METHODS

Values expressed in: per cent   
p. p. m.   
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, (circle)

Others \_\_\_\_\_

Field Analysis (\_\_\_\_\_ tests)

Extraction Method \_\_\_\_\_

Analytical Method \_\_\_\_\_

Reagents Used \_\_\_\_\_

Field Laboratory Analysis

No. (\_\_\_\_\_ tests)

Extraction Method \_\_\_\_\_

Analytical Method \_\_\_\_\_

Reagents Used \_\_\_\_\_

Commercial Laboratory (\_\_\_\_\_ tests)

Name of Laboratory \_\_\_\_\_

Extraction Method \_\_\_\_\_

Analytical Method \_\_\_\_\_

Reagents Used \_\_\_\_\_

General \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_



1984 11 08

Your File: 329/84  
Our File: 2.7298

Mining Recorder  
Ministry of Natural Resources  
60 Wilson Avenue  
Timmins, Ontario  
P4N 2S7

Dear Sir:

RE: Notice of Intent dated October 22, 1984.  
Geophysical (Electromagnetic) & Geological  
Survey on Mining Claims P622800 et al in  
the Township of Denton.

---

The assessment work credits, as listed with the  
above-mentioned Notice of Intent, have been approved  
as of the above date.

Please inform the recorded holder of these mining  
claims and so indicate on your records.

Yours sincerely,

S.E. Yundt  
Director  
Land Management Branch

Whitney Block, Room 6643  
Queen's Park  
Toronto, Ontario  
M7A 1N3  
Phone:(416)965-6918

S. Hurst:sc

cc: Golden Range Resources Inc  
189 Preston Street  
Timmins, Ontario  
P4N 3N4

cc: Mr. G.H. Ferguson  
Mining & Lands Commissioner  
Toronto, Ontario

cc: Resident Geologist  
Timmins, Ontario

**Technical Assessment  
Work Credits**

File  
2.7298

Date  
1984 10 22

Mining Recorder's Report of  
Work No. 329/84

Recorded Holder	GOLDEN RANGE RESOURCES INC
Township or Area	DENTON TOWNSHIP

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ 20 _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological _____ days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	P 725652-53 622800-01-02-04-09-11 624119 to 123 inclusive 624125 to 133 inclusive

**Special credits under section 77 (16) for the following mining claims**

<u>15 DAYS CREDIT</u>	<u>10 DAYS CREDIT</u>	<u>5 DAYS CREDIT</u>
P 622807-10 624124	P 725654 622803	P 622805-06-08

**No credits have been allowed for the following mining claims**

<input type="checkbox"/> not sufficiently covered by the survey	<input type="checkbox"/> Insufficient technical data filed
---	--

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77 (19)—80:





*Nov 6/84*

1984 10 22

Your File: 329/84  
Our File: 2.7298

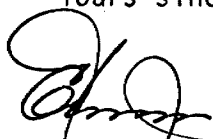
Mining Recorder  
Ministry of Natural Resources  
60 Wilson Avenue  
Timmins, Ontario  
P4N 2S7

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. R.J. Pichette at 416/965-4888.

Yours sincerely,

  
S.E. Yundt  
Director  
Land Management Branch

Whitney Block, Room 6643  
Queen's Park  
Toronto, Ontario  
M7A 1W3

 S. Hurst:mc

Encls.

cc: Golden Range Resources Inc  
189 Preston Street  
Timmins, Ontario  
P4N 3N4

cc: Mr. G.H. Ferguson  
Mining & Lands Commissioner  
Toronto, Ontario



Ministry of  
Natural  
Resources

Ontario

Notice of Intent  
for Technical Reports

1984 10 22

2.7298/329/84

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Lands Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.

# GOLDEN RANGE RESOURCES INC

189 Preston St.  
Timmins, Ontario  
P4N 3N4

(705) 264-7043

October 10, 1984

Mr. F. W. Matthews  
Ontario Ministry of Natural Resources  
Room W1617, Whitney Block  
Queen's Park  
Toronto, Ontario  
M7A 1W3

Re: Geological Survey  
Geophysical Survey  
Claims P725652 et al - Denton Township

Dear Sir:

Enclosed are two copies of a report and plans concerning geological survey carried out over a total of 30 mining claims located in Denton Township, as well as two copies of Horizontal Loop Electromagnetic (HEM-17) survey carried out over this same property.

Yours truly,



Claudia Hanninen

Enclosures

**RECEIVED**

OCT 11 1984

**MINING LANDS SECTION**



EN GL

EN GL

27298

125652

✓ ✓

624119

✓ ✓

53

✓ ✓

20

✓ ✓

54

 $\frac{1}{2}$   $\frac{1}{2}$ 

21

✓ ✓

622800

✓ ✓

22

✓ ✓

01

✓ ✓

23

✓ ✓

2

✓ ✓

24

 $\frac{1}{4}$  ✓

3

 $\frac{1}{2}$  ✓

25

✓ ✓

4

✓ ✓

26

✓ ✓

5

 $\frac{3}{4}$  ✓

27

✓ ✓

6

 $\frac{3}{4}$  ✓

28

✓ ✓

7

 $\frac{1}{4}$  ✓

29

✓ ✓

8

 $\frac{3}{4}$  ✓

30

✓ ✓

9

✓ ✓

31

✓ ✓

10

 $\frac{1}{4}$  ✓

32

✓ ✓

11

✓ ✓

33

✓ ✓

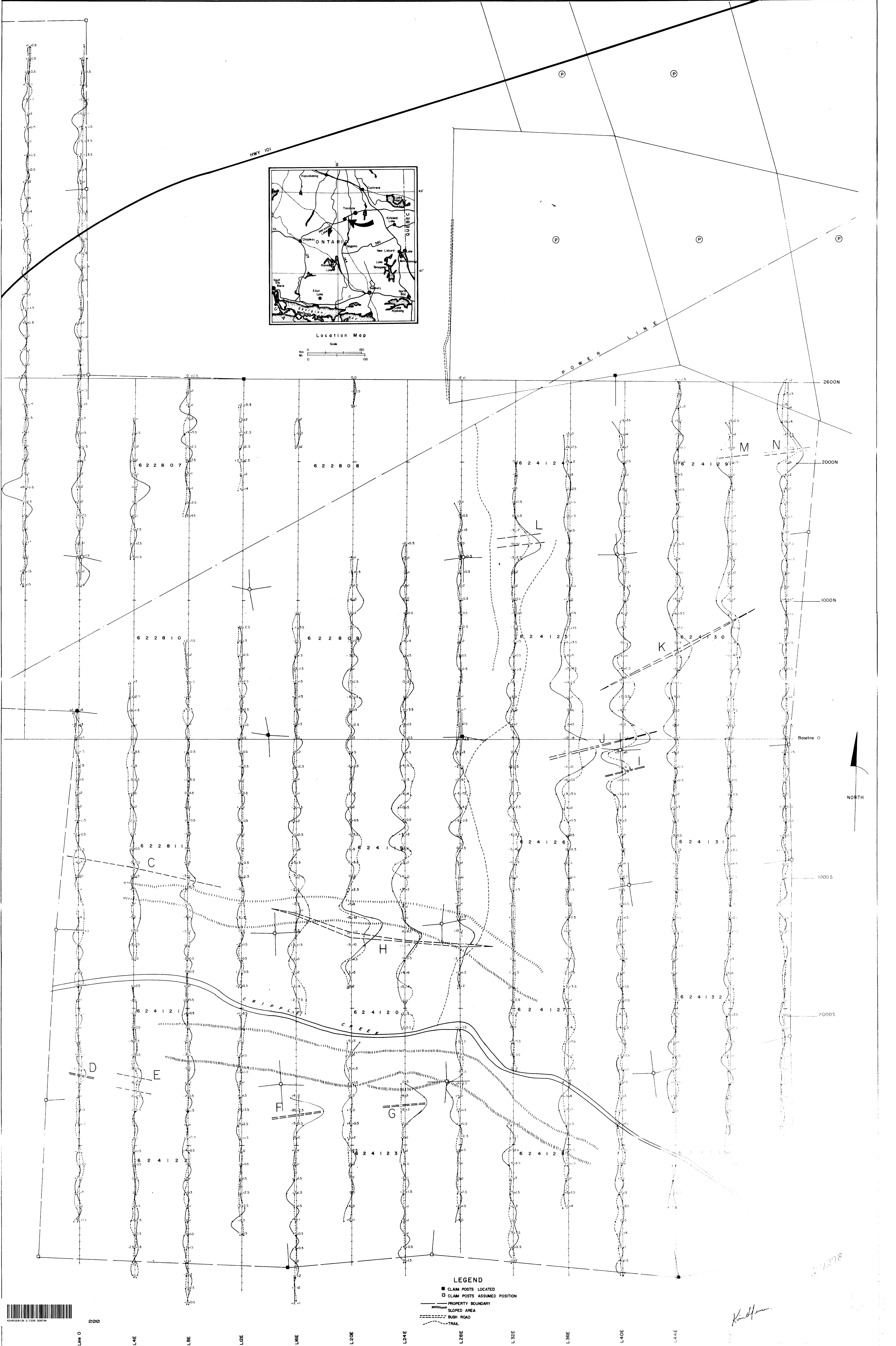
HNC

~~20x30.600~~~~600 : 24 = 1 : 6~~



	EN	GL		EN	GL		27298
125652	✓	✓		624119	✓	✓	
53	✓	✓		20	✓	✓	
54	1/2	1/2		21	✓	✓	
622800	✓	✓		22	✓	✓	
01	✓	✓		23	✓	✓	
2	✓	✓		24	1/4	✓	
3	1/2	✓		25	✓	✓	5
4	✓	✓		26	✓	✓	
5	3/4	✓		27	✓	✓	
6	3/4	✓		28	✓	✓	
7	1/4	✓		29	✓	✓	
8	3/4	✓		30	✓	✓	
9	✓	✓		31	✓	✓	
10	1/4	✓		32	✓	✓	
11	✓	✓		33	✓	✓	
HNC.							
20x30.600							
<del>600 ÷ 34 = 17.6</del>							

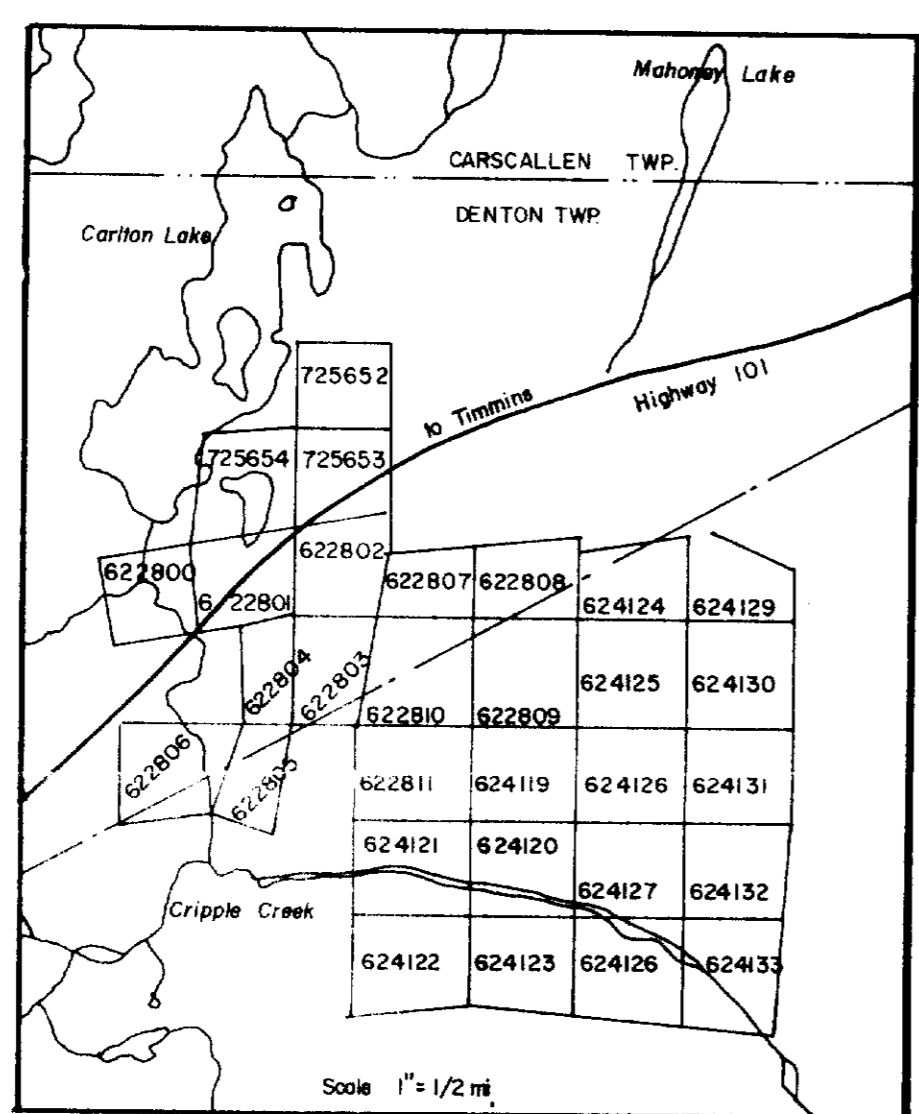
	EN	GL		EN	GL				
125652	✓	✓		624119	✓	✓			2.7298
53	✓	✓		20	✓	✓			
54	1/2	1/2		21	✓	✓			
622800	✓	✓		22	✓	✓			
01	✓	✓		23	✓	✓			
2	✓	✓		24	1/4	✓			
3	1/2	✓		25	✓	✓			5
4	✓	✓		26	✓	✓			
5	3/4	✓		27	✓	✓			
6	3/4	✓		28	✓	✓			
7	1/4	✓		29	✓	✓			
8	3/4	✓		30	✓	✓			
9	✓	✓		31	✓	✓			
10	1/4	✓		32	✓	✓			
11	✓	✓		33	✓	✓			
4 NC									
20x30.600									
<del>600 ÷ 24 = 1.6</del>									



**LEGEND**  
 ■ CLAIM POSTS LOCATED  
 □ CLAIM POSTS ASSUMED POSITION  
 - - - PROPERTY BOUNDARY  
 // SLOPED AREA  
 . . . BUSH ROAD  
 - - - TRAIL

*K. Hoffman*

27298



INSTRUMENT: GEONICS HEM-17  
 FREQUENCY: 1660 Hz.  
 CABLE SPACING: 300 feet  
 INPHASE  $\rightarrow$   
 QUADRATURE  $\dashrightarrow$

LEGEND

- CLAIM POSTS LOCATED
- CLAIM POSTS ASSUMED POSITION
- PROPERTY BOUNDARY
- MINIMUM SLOPE AREA
- ..... BUSH ROAD
- ..... TRAIL

Geophysical Survey  
 Department of Geophysics  
 Ontario

*Kim...*  
 27298

48N

44N

40N

36N

32N

28N

24N

20N

16N

12N

8N

4N

BLO

4S

8S

12S

16S

20S

24S

28S

32S

36S

48N

44N

40N

36N

32N

28N

24N

20N

16N

12N

8N

4N

BLO

4S

8S

12S

16S

DIKE  
Diabase

INTRUSIVE  
Quartz Diorite

SCHISTS

5a Phyllite, Quartz carbonatized Sericite Schist  
5b Chloritic Carbonatized Schist

CHEMICAL METASEDIMENTS  
5c Suphide Iron Formation (float)

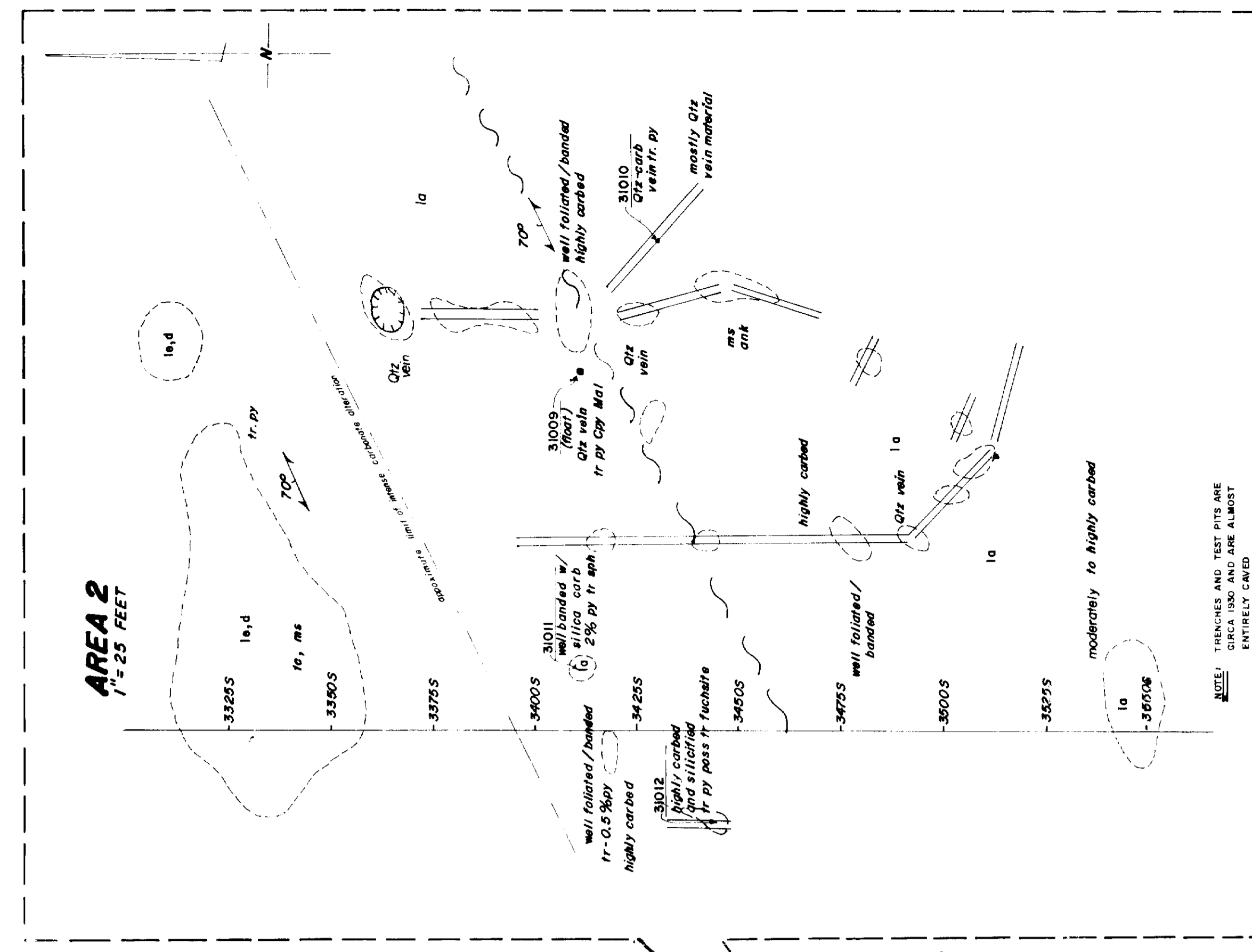
MAFIC to INTERMEDIATE METAVOLCANICS  
2a Massive Basalt Flow  
2c Tuff Breccia

ULTRAMAFIC to MAFIC METAVOLCANICS  
1a Massive Flows (silicified-carbonatized)  
1d Serpenitized Peridotite (komatiitic)

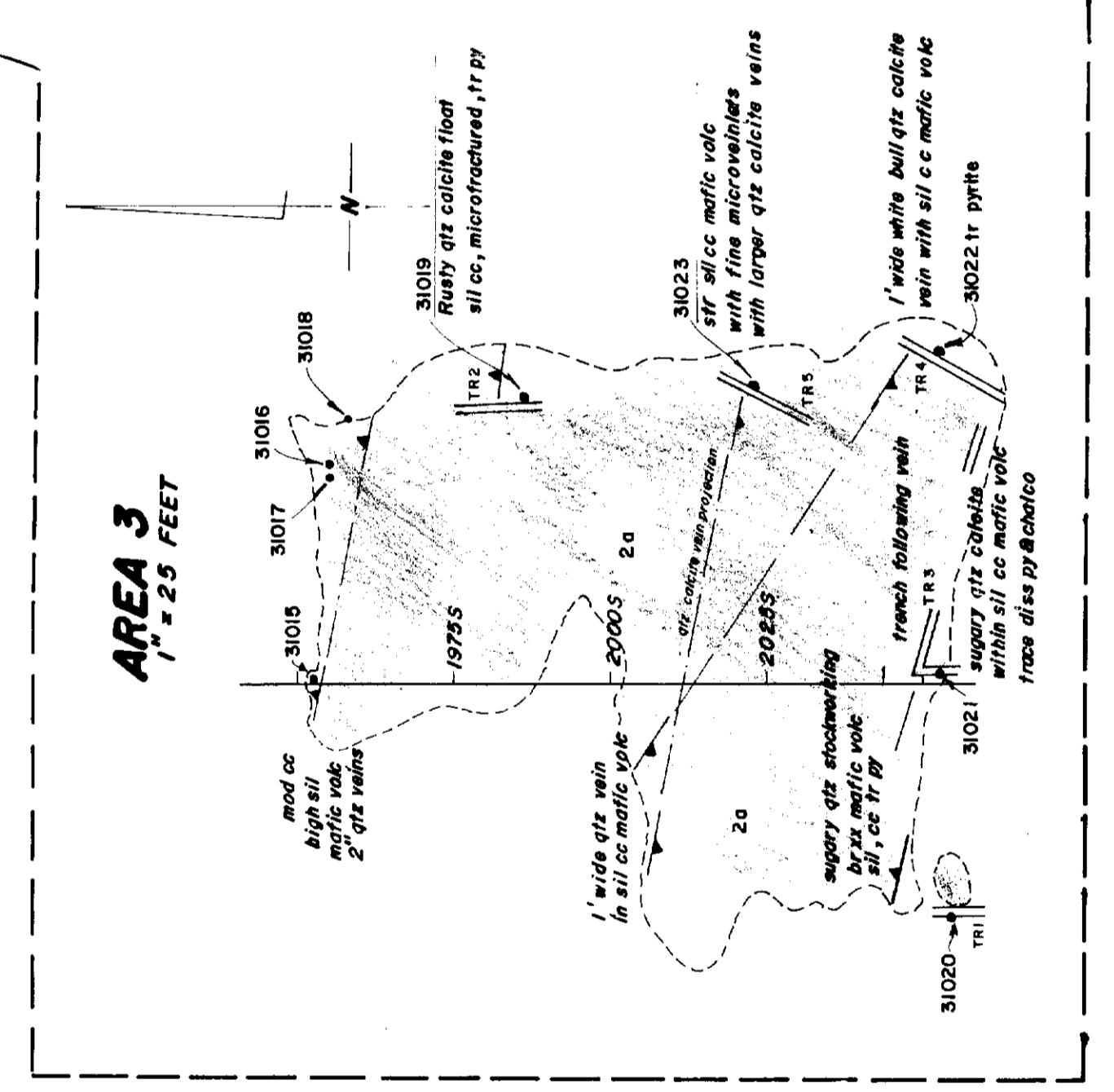
Talose Carbonate Schist

carb	cc	SPRUCE
br	BRCCIA	SPR
ch	CHLORITE	CD
sp	SPHALERITE	PR
py	PYRITE	BM
pr	PRYCLITE	AL
mg	MAGNETITE	POPLAR
sl	SULFIDED	
sd	SIDERITE	TL
an	ANKERITE	TALC
fol	FOLIATION	SCHISTOSE
ve	VEIN	FAULT or SHEAR
o	OUTCROP OUTLINE	TRENCH
o	TOPOGRAPHICAL BOUNDARY	OLD TEST PIT
sw	SWAMP	

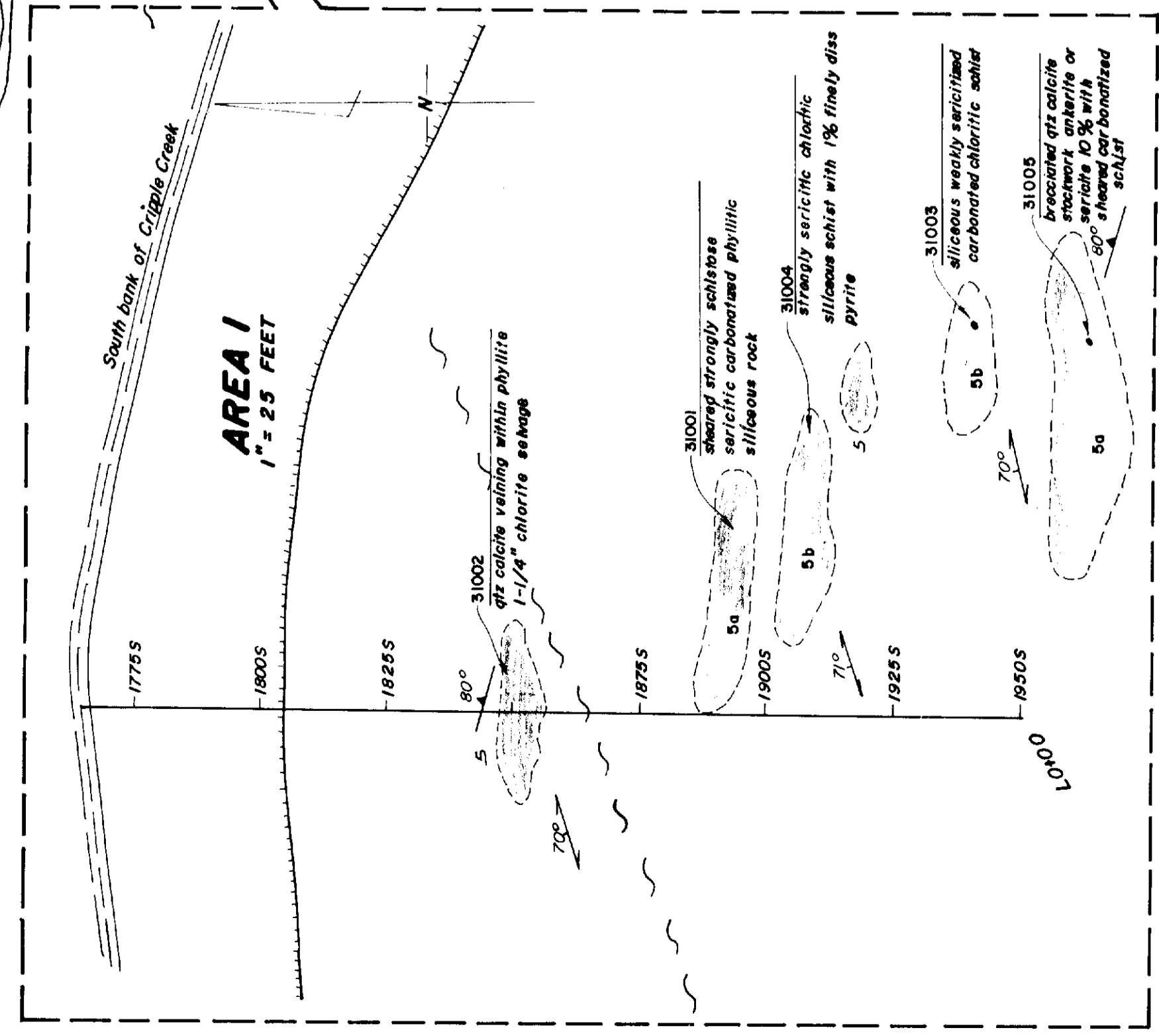
AREA 2  
1" = 25 FEET



AREA 3  
1" = 25 FEET



AREA 1  
1" = 25 FEET



REVISIONS
FOR
Title DENTON TWP PORCUPINE MINING DIVISION
GEOLOGY
ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
GOLDEN RANGE RES.
Date: Aug 84
Scale: 1" = 400'
Drawn: N.T.S.
Approved: N.T.S.
File: M-72

