



42C16NE8194 2.10968 HAWKINS

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REPORT ON THE
AIRBORNE GEOPHYSICAL SURVEY
ON THE PROPERTY OF
GOLDEN RANGE RESOURCES INC.
HAWKINS TOWNSHIP, ONTARIO

2.10968

BY

H. FERDERBER GEOPHYSICS LTD.

March, 1988
Val d'Or, Quebec

R.A. Campbell, B.Sc.
Geophysicist

RECEIVED

MAR 25 1988

MINING LANDS SECTION

Qual.
2.6609

REPORT ON THE
AIRBORNE GEOPHYSICAL SURVEY
ON THE PROPERTY OF
GOLDEN RANGE RESOURCES INC.
HAWKINS TOWNSHIP, ONTARIO

INTRODUCTION

On January 19, 1988 an airborne VLF-Electromagnetic survey was carried out on the property of Golden Range Resources Inc. in Hawkins Township, Ontario. VLF-electromagnetic data was collected by the airborne division of H. Ferderber Geophysics Ltd. The survey was flown from a base at Hearst, Ontario. A total of 49.69 miles of data was collected. The VLF-electromagnetic survey outlines conductive zones which may represent shear zones and/or metallic sulphide deposits containing gold mineralization.

PROPERTY DESCRIPTION, LOCATION AND ACCESS

The Golden Range property is comprised of 36 claims in the western half of Hawkins Township, Sault Ste. Marie Mining Division, Ontario. The claims cover approximately 576 hectares, are registered with the Ontario Mining Recorder's Office at Sault Ste. Marie and are listed in Appendix 1.

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The property is located approximately 7 km south-southeast of the small railway village of Oba and 64 km south-southwest of the town of Hearst. Access can be reached by taking Highway 583, south from Hearst, for 40 km then travelling over a gravel road for 75 km until Oba. A gravel road south from Oba passes within 2 km of the southern and western boundaries. A bush road north from the southern road is situated 0.8 km south of the southwestern corner of the claim group. The Algoma Central Railway is located 4 km east of the property.

Most of the property is forested and a tributary of the Oba River flows through the eastern half of the claim group. A small lake lies 0.8 km west of the northwest corner of the property. Topographic relief in the area is generally low.

Supplies, services and manpower are available in the Hearst-Kapuskasing-Hornepayne area.

GEOLOGY

The Ontario Department of Mines, Geological Compilation Sheet 2220, the Manitouwadge-Wawa Area outlines the geology underlying the claims. The southern 75% of the property is underlain by an east-west striking unit of mafic metavolcanic rocks. The northern 25% of the claim group is underlain by felsic igneous and metamorphic rocks. A north-northwest striking Middle to Late Precambrian diabase cuts across the metavolcanic rocks in the southwest corner of the claim block.

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The Shenango Prospect is located in mafic metavolcanic rocks approximately 5 km east, along strike, from the property. In 1936, 1937 and 1945, 67 Oz. of Au and 37 oz. of Ag were recovered from 2,400 tons of ore. Mineralization was found in auriferous quartz veins. B. Durham in his report on the Cleyo Resources Inc. Derry Township Property (1986) indicates that the Shenango is now owned by Falconbridge Ltd. and the gold mineralization lies along the southern contact of a magnetic anomaly that strikes westward from central Hawkins Township across Derry Township. The results of a recent airborne magnetic and electromagnetic survey by Aerodat for the Ministry of Northern Development and Mines, maps 20832 and 20831 show that a weak electromagnetic anomaly is located near this gold prospect.

Another gold showing, 2.6 km east along strike of the Shenango Prospect, lies in mineralized veins within quartz migmatite.

INSTRUMENTATION AND SURVEY METHODS

The survey was completed using a 1972 Cessna 172, fixed-wing aircraft, call letters CF-EWK, owned and operated by H. Ferderber Geophysics Ltd. The pilot and navigator/operator were Y. Saucier and M. Caron, respectively, of Val d'Or. Geophysical sensors were mounted in modified wing tips. The geophysical, navigation and data acquisition systems are described below.

VLF-EM System

A Herz Totem 2A VLF-EM system was used to measure the changes in the total field and in the vertical quadrature field on two frequencies simultaneously, with an accuracy of 1%. The primary transmitting station of Annapolis, Maryland (NSS) frequency 21.4 KHz was employed for the survey.

Radar Altimeter

The ground clearance was measured with a King 10/10 A radar altimeter. The survey was flown at a mean clearance of 300 feet with the altimeter producing an accuracy of 5% (15 feet) at this altitude.

Tracking Camera and Video Centre

A RCA TC-200 colour video camera and Galaxy 200 video centre was used to record the flight path on standard VHS type video tapes. Manual fiducials were indicated on the picture frames for reference with the digital printout. Flight path recovery was aided using a Panasonic Colour Video Monitor-S1300 and Video Cassette Recorder AG-2500.

-5-

Data Aquisition System

A Picodas Group Inc. PDAS 1100 data aquisition system featuring seven analog inputs with two frequency inputs and external interfacing was used. A Termiflex Corp. ST/32 Keyboard control unit and Sharp Corp. LCD display unit are connected to the data aquisition system. At present this system stores the altimeter VLF-1 inphase, VLF-1 quadrature, VLF-2 inphase, VLF-2 quatrature, magnetic field (coarse), magnetic field (fine), and the fourth difference (noise), and fiducials on 3.5 inch floppy disk drive. The data is then printed out in digital and profile form.

The survey was conducted on east-west lines at an aircraft altitude of 300 feet. The lines were flown at spacings of 440 feet at a speed of approximately 90 miles per hour. Navigation was visual using airphoto mosaics, at a scale of one inch to 1320 feet, manual fiducials and the flight path recovery system as references.

DATA PRESENTATION

Flight lines, fiducial points and geophysical responses were reproduced from the airphoto mosaics on a map at a scale of one inch to 1320 feet (15,840). The outline of the claim group and claim map are shown on each map sheet.

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A base value was determined for the VLF-EM data and the change in the total field strength as a percentage of the base value was calculated. The values were plotted on map EM-1. The positive values were contoured at intervals of 2%. The conductor axes were determined and labelled 1, 2, 3, etc. No priority was attached to the labelling system.

SURVEY RESULTS AND INTERPRETATION

Four conductive zones were delineated on the Golden Range property by the VLF-electromagnetic survey. Zones 1 and 2 strike east-west and zones 3 and 4 trend north-northeast.

Zone 1 is comprised of 3 small conductors located in the central part of the claim block and zone 2 is made up of 2 conductors lying along the southern boundary. The Ontario Ministry of Northern Development and Mines, Geophysical/Geochemical Series map 80832 outlines the airborne magnetic pattern over the property. This map indicates that zones 1 and 2 lie along the contacts between magnetic lows, to the south, and magnetic highs to the north, in a magnetic environment similar to the two gold occurrences, along strike to the east. Zones 1 and 2 represent shear zones along two possible contacts between mafic metavolcanic rocks and narrow bands felsic metavolcanic rocks, to the north and south, respectively.

-7-

Conductive zone 3 is a 1 km long conductor lying east of a creek. It could outline the location of a shear zone cross-cutting mafic metavolcanic rocks.

Zone 4 is comprised of two parallel striking conductors. They are located near the diabase dyke and could represent sheared contacts with the surrounding mafic metavolcanics.

CONCLUSIONS AND RECOMMENDATIONS

The VLF-Electromagnetic survey was successful in delineating 4 conductive zones on the Golden Range property in Hawkins Township, Ontario. Zone 1 and 2 are good targets for gold mineralization, since they lie in a similar magnetic environment to the Shenango Prospect, situated 5 km along strike from the property. These zones could represent mineralized shears near two possible mafic metavolcanic (to the north) and felsic metavolcanic (to the south) contacts. Zone 4 could be shears along a diabase mafic metavolcanic contact, while zone 3 may be a cross-cutting shear in metavolcanics.

-8-

Because of the proximity, position and expression of conductive zones with respect to the gold occurrences in Hawkins Township, east of the property, further work should be performed. If not already completed, ground geophysical surveys comprising of gradient magnetic and horizontal loop electromagnetic surveys should be performed. The property should also be mapped and sampled. Any geophysical/geological anomalies with expressions similar to that of the Shenango Prospect should then be drilled in an attempt to outline gold mineralization.

Respectfully submitted,

R. A. Campbell

R.A. Campbell, B.Sc.
Geologist

APPENDIX 1 - CLAIM LIST

P 709501	P 709519
709502	709520
709503	709521
709504	709522
709505	709523
709506	709524
709507	709525
709508	709526
709509	709527
709510	709528
709511	709529
709512	709530
709513	709531
709514	709532
709515	709533
709516	709534
709517	709535
709518	709536



Ministry of Northern Development and Mines

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

DOCUMENT

W8305-31



42C16NE8194 2.10968 HAWKINS

900

Mining A

Type of Survey(s)

Airborne VLF-Electromagnetic

210968

Hawkins Township

(WAWA-GEC)

Golden Range Resources Inc.

T 1324

Address

C/O Durham Geological Services Inc., P.O. Box 743, Timmins, Ontario P4N 7G2

Survey Company

H. Ferderber Geophysics Ltd.

Date of Survey (from & to)

Total Miles of Line Cut

19 01 88 | 19 01 88 | 49.69

Name and Address of Author (of Geo. Technical report)

R. A. Campbell - G. Henriksen, 169 Perreault Ave., Val d'Or, Que. J9P 2H1

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Electromagnetic	
	Magnetometer	
	Radiometric	
	Other	
For each additional survey using the same acid: Enter 20 days (for each)	Geological	
	Geochemical	
Man Days	Geophysical	Days per Claim
Complete reverse side and enter total days	Electromagnetic	
	Magnetometer	
	Radiometric	
	Other	
	Geological	
	Geochemical	
Airborne Credits	Geophysical	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	20
	Magnetometer	
	Radiometric	

Prefix	Mining Claim Number	Expend. Days Cr.	Prefix	Mining Claim Number	Expend. Days Cr.
P	709501		P	709524	
	709502			709525	
	709503			709526	
	709504			709527	
	709505			709528	
	709506			709529	
	709507			709530	
	709508			709531	
	709509			709532	
	709510			709533	
	709511			709534	
	709512			709535	
	709513			709536	
	709514				
	709515				
	709516				
	709517				
	709518				
	709519				
	709520				
	709521				
	709522				
	709523				

RECEIVED

MAR 08 1988

MINING LANDS SECTION

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
OFFICE

APR 20 1988

RECEIVED

RECORDED

FEB 24 1988

36

Receipt No.

For Office Use Only		Mining Recorder
Total Days Credits Recorded	Date Recorded	<i>[Signature]</i>
720	Feb 24/88	
	Date Approved as Permitted	
	8 April 88	

Feb 18, 1988
Registered Holder or Agent (Signature)
[Signature]

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
Harry Ferderber 169 Perreault Ave, Val d'Or, Que. J9P 2H1
Date Certified: Feb 19, 1988

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 8000:1 _____
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) VLF-Electromagnetic

Instrument(s) Herz Totem 2A
(specify for each type of survey)

Accuracy 1%
(specify for each type of survey)

Aircraft used Cessna 172

Sensor altitude 300 feet

Navigation and flight path recovery method Navigation was visual on airphoto mosaics.

Flight path recovery was obtained with a RCA colour video camera and a Panasonic

Colour Video Monitor. 300 feet Line Spacing 440 feet

Aircraft altitude _____ Miles flown over total area 49.69 Over claims only 28.7

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 _____

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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709513	709531
709514	709532
709515	709533
709516	709534
709517	709535
709518	709536

FRANZ TWP

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M + S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition
(13)		4/10/72	

DATE OF ISSUE

FEB 26 1988

SAULT STE. MARIE
MINING RECORDER'S OFFICE

LEGEND

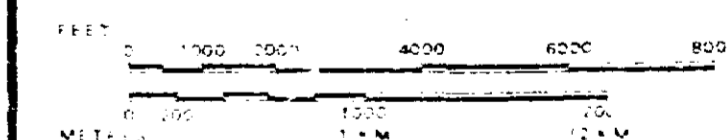
- HIGHWAY AND ROUTE No
- OTHER ROADS
- TRAILS
- SURVEYED LINES
- TOWNSHIPS, BARE LINES ETC
- LOTS, MINING CLAIMS PARCELS ETC
- UNSURVEYED LINES
- LOT LINES
- PARTIAL BOUNDARIES
- MINING CLAIMS
- RAILWAY AND RAILWAY
- UTILITY LINES
- NON-PERMANENT STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- WIND
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LAND

- | TYPE OF DOCUMENT | SYMBOL |
|-------------------------------|--------|
| PATENT SURFACE MINING RIGHTS | |
| " SURFACE RIGHTS ONLY | |
| " MINING RIGHTS ONLY | |
| LEASE SURFACE & MINING RIGHTS | |
| " SURFACE RIGHTS ONLY | |
| " MINING RIGHTS ONLY | |
| COVENANT OF OCCUPATION | |
| GENERAL BOUNDARY | |
| SAND & GRAVEL | |

NOTE: MINING RIGHTS ARE NOT VALID UNLESS THEY COMPLY WITH THE REQUIREMENTS OF THE MINING ACT AND THE LANDS ACT AND THE CHAP. J80 SEC. 10 SUBSECTION 10.

SCALE: 1 INCH = 40 CHAINS



TOWNSHIP

HAWKINS

M.N.R. ADMINISTRATIVE DISTRICT

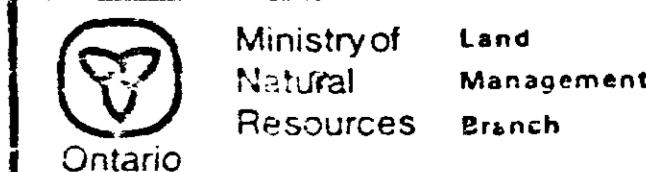
HEARST

MINING DIVISION

SAULT STE. MARIE

LAND TITLES / REGISTRY DIVISION

ALGOMA



Date: MARCH 3, 1983

Number:

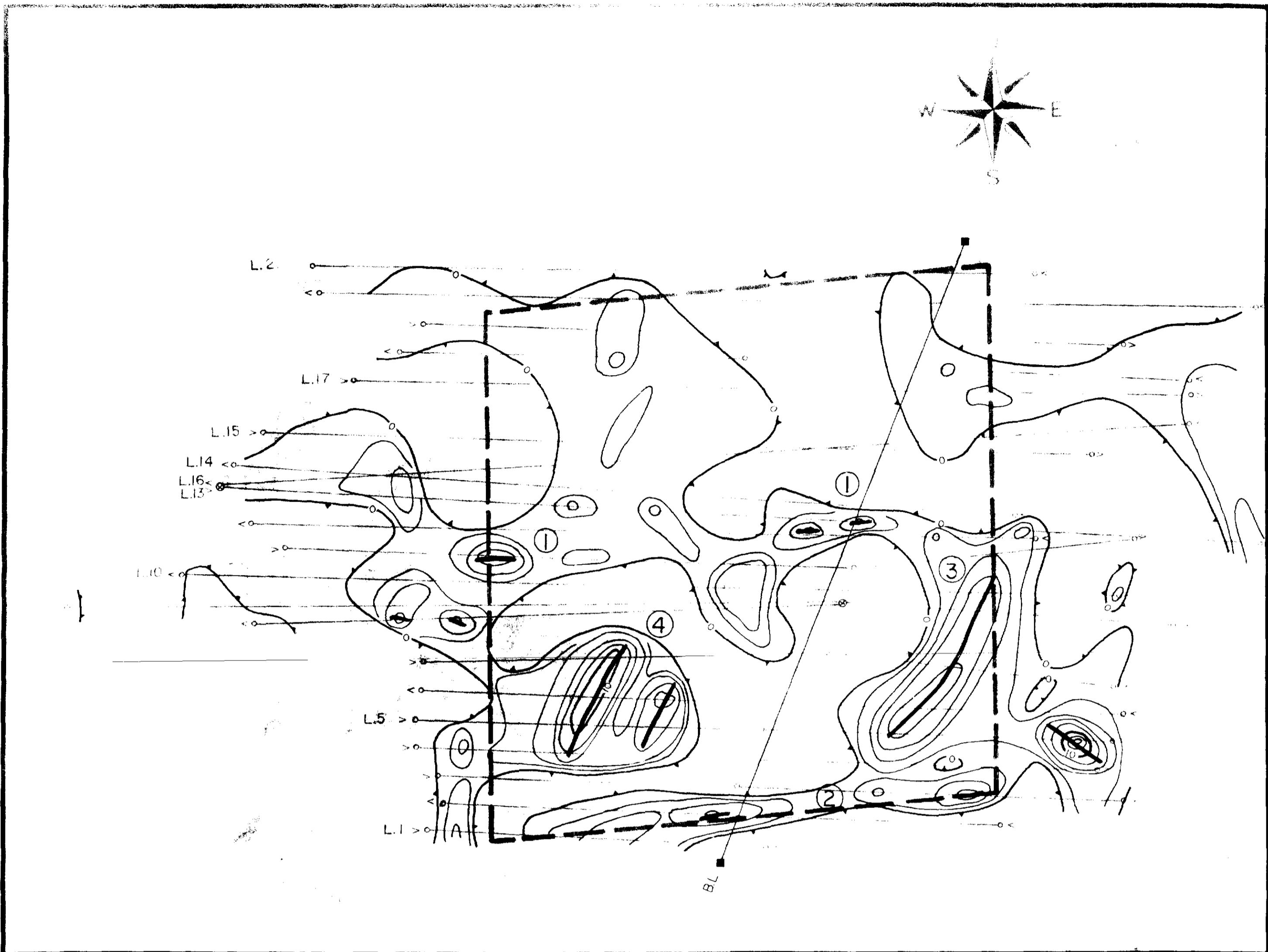
Checked by *LD* G-2316

DERRY TWP

WALLS TWP

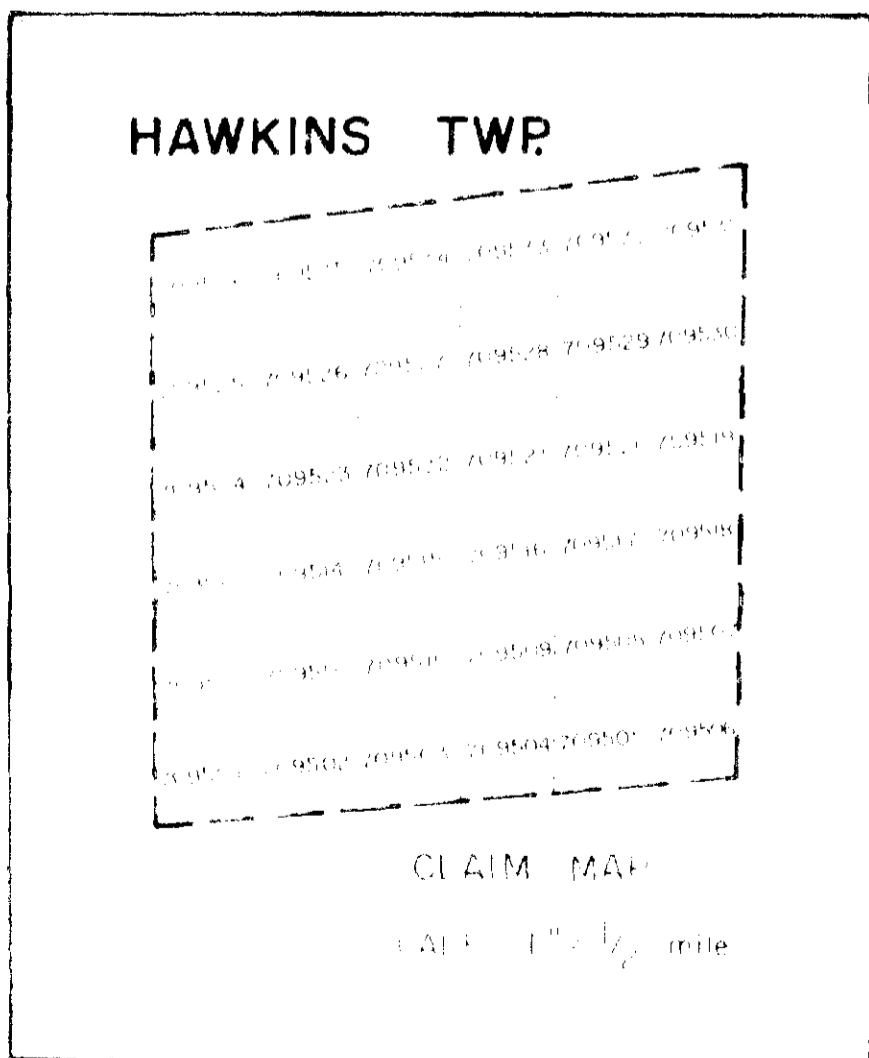
IRVING TWP





LEGEND

- TOTAL FIELD CONTOUR INTERVAL 2 %
 - CONDUCTOR AXIS
 - FIDUCIAL POINT
 - > LINE DIRECTION
 - ⊖ LESS THAN ZERO
 - 10 %
 - 2 %
 - 0 %
- STATION USED: ANNAPOLIS, MARYLAND, U.S.A. (N.S.S. 214 kHz)



2.10968

AIRBORNE V.L.F.-EM SURVEY

GOLDEN RANGE RES. INC.

AREA		HAWKINS TWP ONE	
SCALE		1" = 1/4 mile	DATE
DRAWN BY		RA	JAN. 1988
DRAWN BY		H Ferderber Geophysics Ltd.	MAP OR SHEET NO
			EM-1

