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Assessment Report

On

VLF EM-16 Surveying

Claim 4266871

SANDRA BRECCIA

Norberg Township

**Sault Ste. Marie Mining Division
District of Algoma
N.T.S: 41N/01**

Prepared by: Shaun Parent

Claim Holder

February 20, 2016

Executive Summary:.....	4
Highlights:	4
Introduction	4
Location and Access.....	5
Claim Block.....	5
Figure 1 General Location Map.....	6
Figure 2 Location Map of Claims.....	7
Personnel	7
Work Performed	7
Figure 3 Claim on Airborne EM Magnetics	8
Figure 4 Google Image of VLF Lines	8
Table 1 VLF Lines Surveyed.....	9
VLF Data Processing.....	10
Table 2 Example of VLF Field Data Collection.....	10
Figure 5 Fraser Filtered Plan Map – In Phase.....	11
Figure 6 Fraser Filtered Plan Map – Quadrature	12
Figure 7 Model Cross Section.....	13
Figure 8 Photo: Discovery Outcrop	14
Conclusions and Recommendations.....	15
List of References.....	15
Certificate of Qualifications	16
APPENDIX A Line SB1Ee	17
Line SB1Ee Raw Data Profile	17
Line SB1Ee Fraser Filter Profile	17
APPENDIX B Line SB2Ee	18
Line SB2Ee Raw Data Profile	18
Line SB2Ee Fraser Filter Profile	18
APPENDIX C Line SB1E	19
Line SB1E Raw Data Profile	19
Line SB1E Fraser Filter Profile	19
APPENDIX D Line SB2E	20
Line SB2E Raw Data Profile	20
Line SB2E Fraser Filter Profile	20
APPENDIX E Line SB2EA	21

Line SB2EA Raw Data Profile	21
Line SB2EA Fraser Filter Profile	21
APPENDIX F Line SB3E.....	22
Line SB3E Raw Data Profile	22
Line SB3E Fraser Filter Profile	22
APPENDIX G Line SB4E	23
Line SB4E Raw Data Profile	23
Line SB4E Fraser Filter Profile	23
APPENDIX H Line SB5E	24
Line SB5E Raw Data Profile	24
Line SB5E Fraser Filter Profile	24
APPENDIX I Line SB6E.....	25
Line SB6E Raw Data Profile	25
Line SB6E Fraser Filter Profile	25
APPENDIX J Line 3E	26
Line 3E Raw Data Profile	26
Line 3E Fraser Filter Profile	26
APPENDIX K Line 4E.....	27
Line 4E Raw Data Profile	27
Line 4E Fraser Filter Profile	27
APPENDIX L EM16 Specifications.....	28
APPENDIX M Operating Manual for EM16 VLF-EM	29

Executive Summary:

Claim 4266871 is located in the Sault Ste. Marie Mining Division, approximately 65 kilometers north of Sault Ste. Marie, Ontario. The Claim consists of 2- 16 hectare units and is located less than 500 meters due east of the deposit known as the East Breccia. The Sandra Breccia is a new discovery in the area of the Tribag Mines.

A VLF EM-16 Survey program was carried out in January 2014 and December 2015, using a VLF EM-16 and a handheld Garmin GPS-60C. 2 transmitter stations were used: one to the East - NAA (Cutler, Maine) and one to the West - NML (La Moure, North Dakota).

The objective of the VLF Em-16 Survey was to determine if the weak magnetic anomaly east of the East Breccia deposit represented a possible mineralized Breccia Pipe. There are three known mineralized breccia pipes located to the west of Claim 4266871. The Breton Breccia contains an estimated 40 million tons of 0.3-0.4% Copper. The West Breccia has a resource of 223,000 tons of 0.75% copper, while the East Breccia contains a historical resource of 125 million tons of 0.13% copper. The West Breccia and the East breccia deposits have associated high airborne magnetic responses.

Highlights:

- Follow up of the VLF Em-16 survey discovered several new sites carrying copper-malachite-pyrite mineralization. The most significant is shown in (Figure 7 / Photo 8)
- This new Breccia discovery has been named the “SANDRA BRECCIA”
- The VLF EM-16 survey outlined conductors that could be the mineralized zones near the tops of a breccia pipe.
- The new mineralization discovered on claim 4266871 is similar to that of other breccia pipes in the area.

Introduction

Claim 4266871, the Sandra Breccia property, is located in the Sault Ste. Marie Mining Division, approximately 65 kilometers north of Sault Ste. Marie, Ontario. The property consists of 3- 16 hectare claim units.

Between January 2014 and December 2015, 11 VLF traverse lines were surveyed using a Geonics EM-16 VLF Instrument.

This Assessment report describes the findings and results of the VLF EM-16 survey utilizing the new VLF 2DMF processing software of which the author of this report has contributed to its development.

Location and Access

Claim 4266871 is located in the mining District of Sault Ste. Marie.

The Claim group is located near the West boundary of Norberg Township. The property is located approximately 65 km. North of the City of Sault Ste. Marie, Ontario.

The claims are located on NTS Maps 41N/1. The Mining claims are found on Norberg Plan G-3120. (See Figure-1)

Access to the property can be accomplished by a 2 wheel drive vehicle along the Carp River Road. Winter access is by snow machine only, unless logging is taking place in the immediate vicinity of claims and along the East Breccia Access Road.

Directions to the property is as follows:

- Drive North from Sault Ste. Marie on Highway 17 for approximately 40 minutes to the junction of Highway 538 to the Batchawana Bay.
- Continue North on Highway 17 for 200 meters to the Carp River Road.
- Follow the Carp River Road for 20 kilometers until you reach the bypass to Mile 67 Road.
- Turn right and continue on the main road. As you pass a lake on the left side, there is a steep turn to the right.
- At this junction is where the #3 Post for claim 4266871 is found next to the road.

Claim Block

The claim number covered by the VLF-Em-16 survey is 4266871 and consists of 3- 16 Hectare claim units. (See Figure-2)

Figure 1 General Location Map

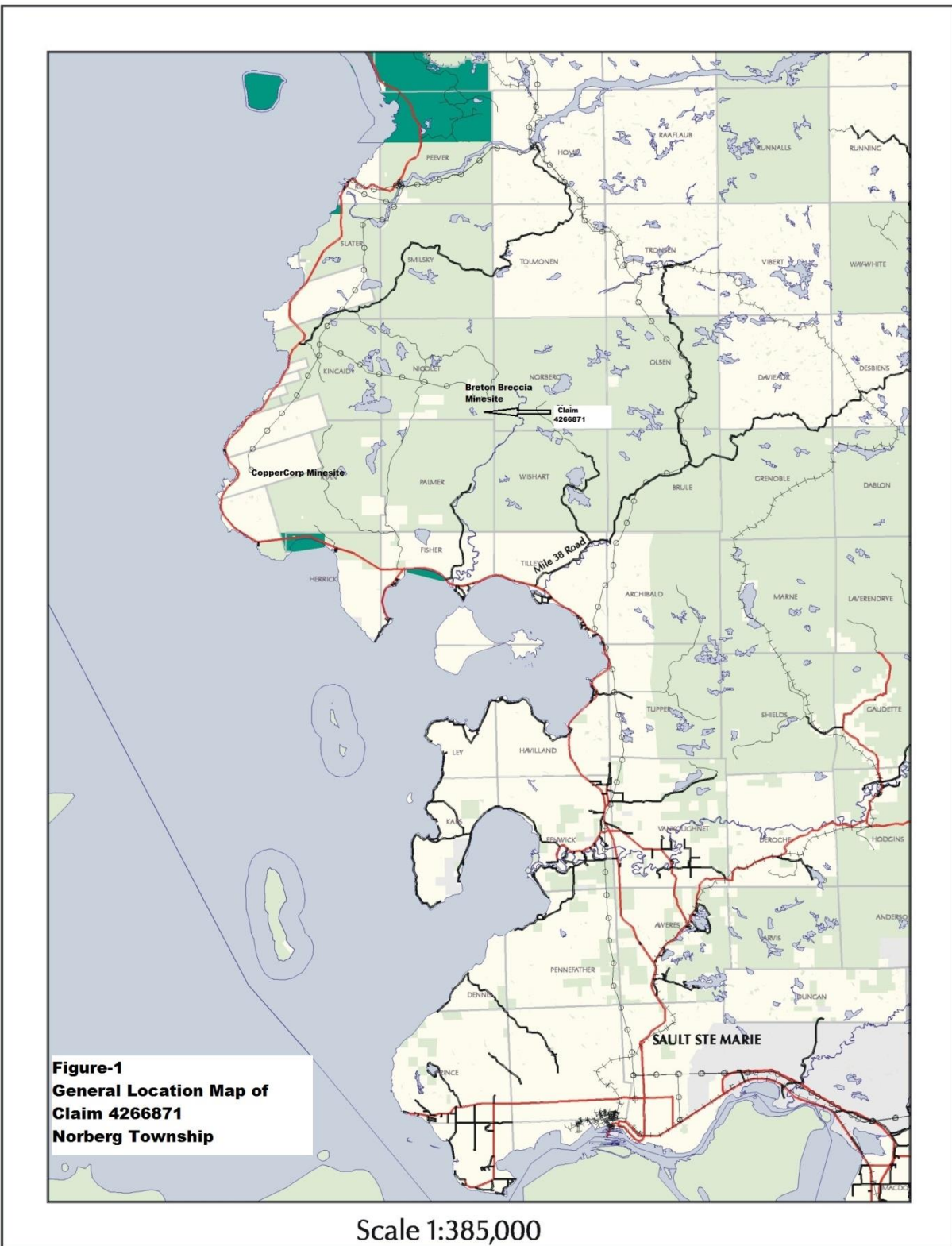
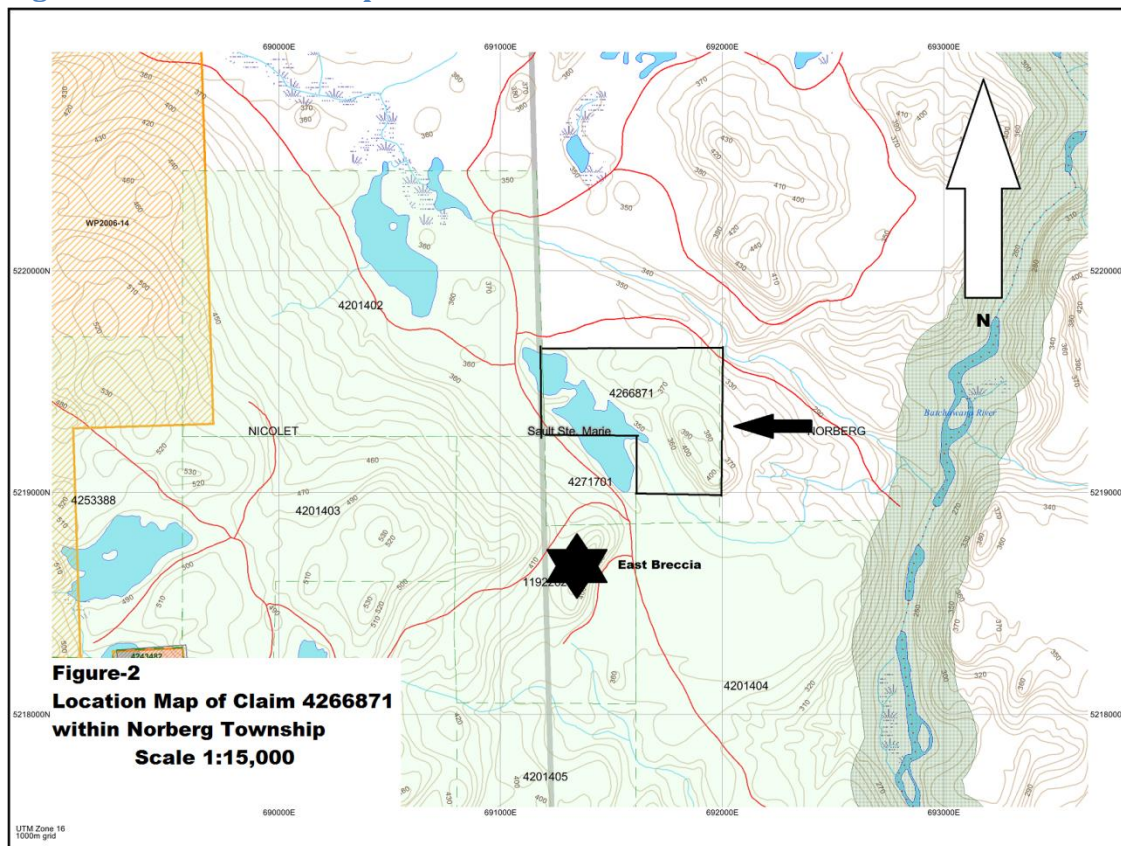


Figure 2 Location Map of Claims



Personnel

The VLF EM-16 and GPS field navigator responsible for the collection of all raw data and the processing of raw data with the VLF2DMF Software was Shaun Parent.

Work Performed

The VLF EM-16 survey consisted of running 11 VLF traverse Lines

The VLF survey lines were chosen to best cover the complete 4266871 Claim as in Figure-3

All VLF were aligned to cover the magnetic anomaly and are shown on a Google earth image in Figure 4. A total of 6.18 Kilometers of VLF surveying was carried out on Claim 4266871.

The VLF lines were completed while using a handheld Garmin 60-CSX GPS. Each VLF station was located based on its azimuth and distance from the start of the survey line. At each line station, 2 transmitter stations were read using the Geonics VLF- Em-16 serial number 0236. The following parameters were used throughout the survey.

- VLF Em-16 Receiver # 236
- VLF Transmitters – NAA Cutler, Maine 24.0 KZ and NML La Mour, North Dakota 25.8 KZ
Data collected for transmitter NAA (Cutler, Maine) has been processed for this report.
- VLF survey direction- See Table 1

Table 1 VLF Lines Surveyed

Line Number	Azimuth	Surveyed Stations	Line Length Meters
SB1Ee	128	2+60S to 4+00S	136
SB2Ee	133	2+20N to 7+80S	982
SB1E	180	4+40S to 0+20S	439
SB2E	180	1+20N to 2+40S	445
SB2EA	142	1+20S to 10+60S	940
SB3E	142	1+00S to 8+40S	750
SB4E	171	1+00S to 9+00S	800
SB5E	146	1+00S to 6+60S	560
SB6E	146	1+20S to 3+40S	210
3E	187	5+75N to 10+75N	500
4E	184	5+75N to 10+00N	425

Parameters of Measurement- In-phase and Quad-phase components of vertical magnetic field as a percentage of horizontal primary field. (Tangent of tilt angle and ellipticity). TX transmitter NAA was to the East of the survey while TX transmitter NML was to the West.

VLF Data Processing

The VLF Field data was collected as follows on each surveyed line.

- 1) Each station was saved using the Handheld Garmin 60CSX Handheld GPS Unit.
- 2) VLF data for Station NAA and NML was recorded in a notebook as In-Phase and Quadrature corresponding to the line and station. See example in Table 2.

Table 2 Example of VLF Field Data Collection

Line 4E	NAA Inphase	NAA Quadrature	NML Inphase	NML Quadrature
0+00	10	-8	12	-7
0+20E	12	-7	14	-9
0+40E	14	-6	16	-10

The handheld Garmin Field data was downloaded onto the Garmin Map Source program where line information could be viewed relative to local features such as claim lines, roads etc.

The Garmin field data and the raw VLF notes were then combined and compiled onto an excel spreadsheet which was then entered into the VLF2DMF Processing software.

The result of entering this field data into the software produced profiles of survey lines as well as plan maps of combined surveyed lines. All of which are found at the end of this report.

1) Plan Map of Lines Surveyed (Figure-4)

2) Raw VLF Profiles for Transmitter NAA

The Raw data collected in the field is plotted showing the In-Phase component as a red dashed line and the quadrature component as a blue dashed line. In-Phase inflections and cross overs are usually plus to minus, while Quadrature responses are negative to positive.

3) Fraser Filter Profiles for Transmitter NAA

The data processing technique commonly referred to as the Fraser Filter was applied to the raw data. This filter transforms In-Phase cross overs and inflections into positive peaks, while Quadrature responses are negative to positive giving a negative peak anomaly when the Fraser Filter is applied.

4) Fraser Filtered Plan Maps NAA In Phase and NAA Quadrature (Figures 5, 6)

The VLF2DMF software uses the Fraser filtered profiled data and produces contoured results on a plan map. Positive peaks in the In-Phase Component are shown as orange and negative peaks in the Quadrature component are shown on the plan maps as blue. The intensity of the response is measured on the scale bar to the right of the plan maps.

Figure 5 Fraser Filtered Plan Map - In Phase

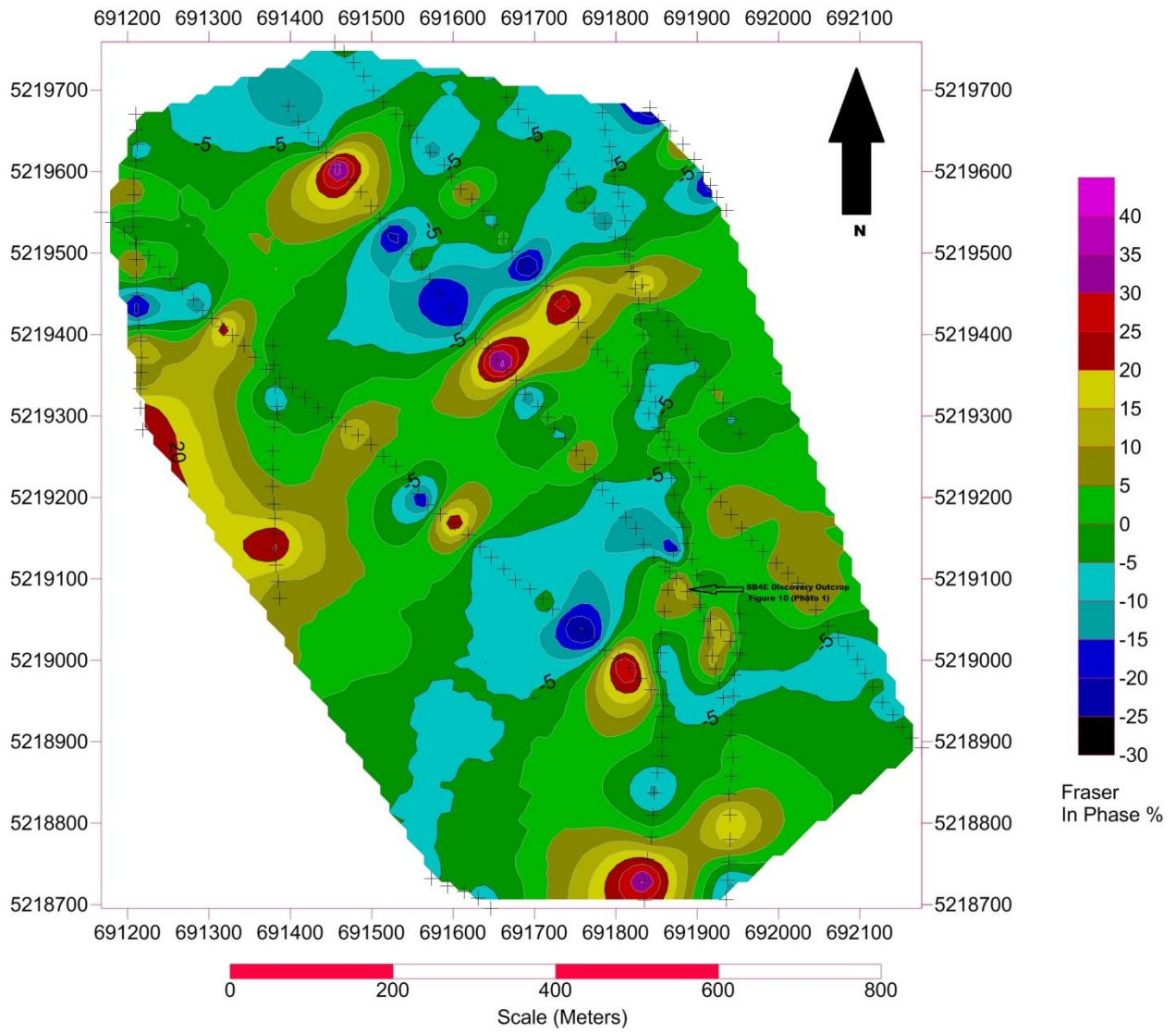


Figure 6 Fraser Filtered Plan Map – Quadrature

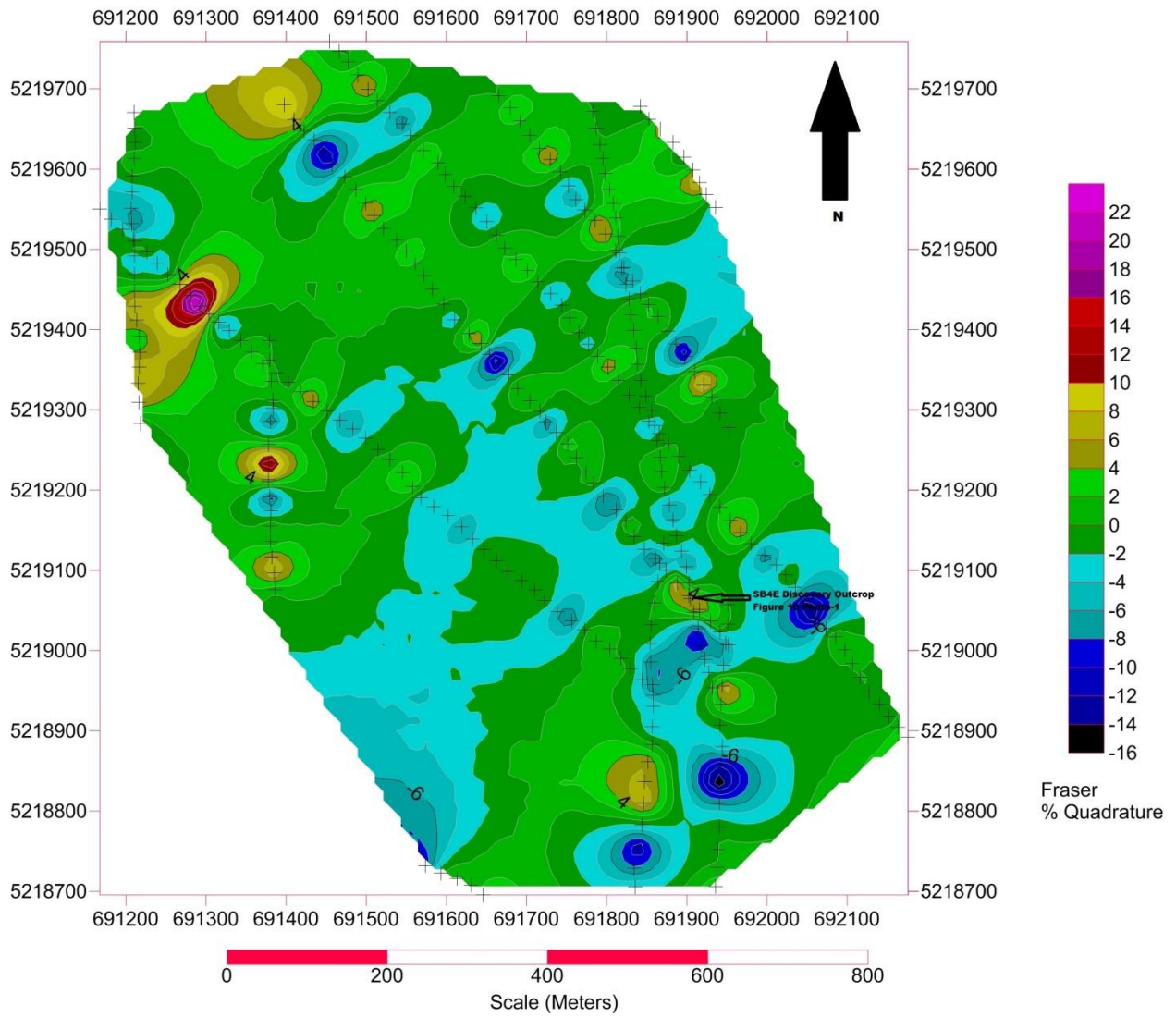


Figure 7 Model Cross Section

Figure-7
Claim 4266871 Sandra Breccia
Line SB4E Model Cross Section

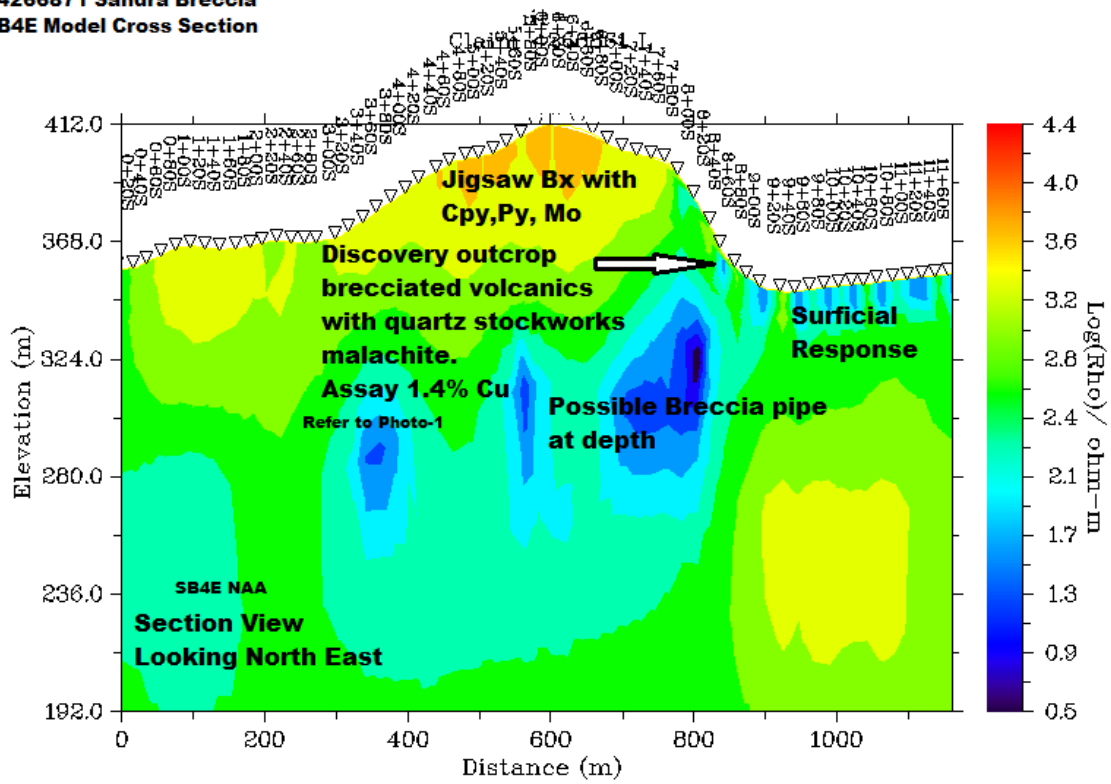
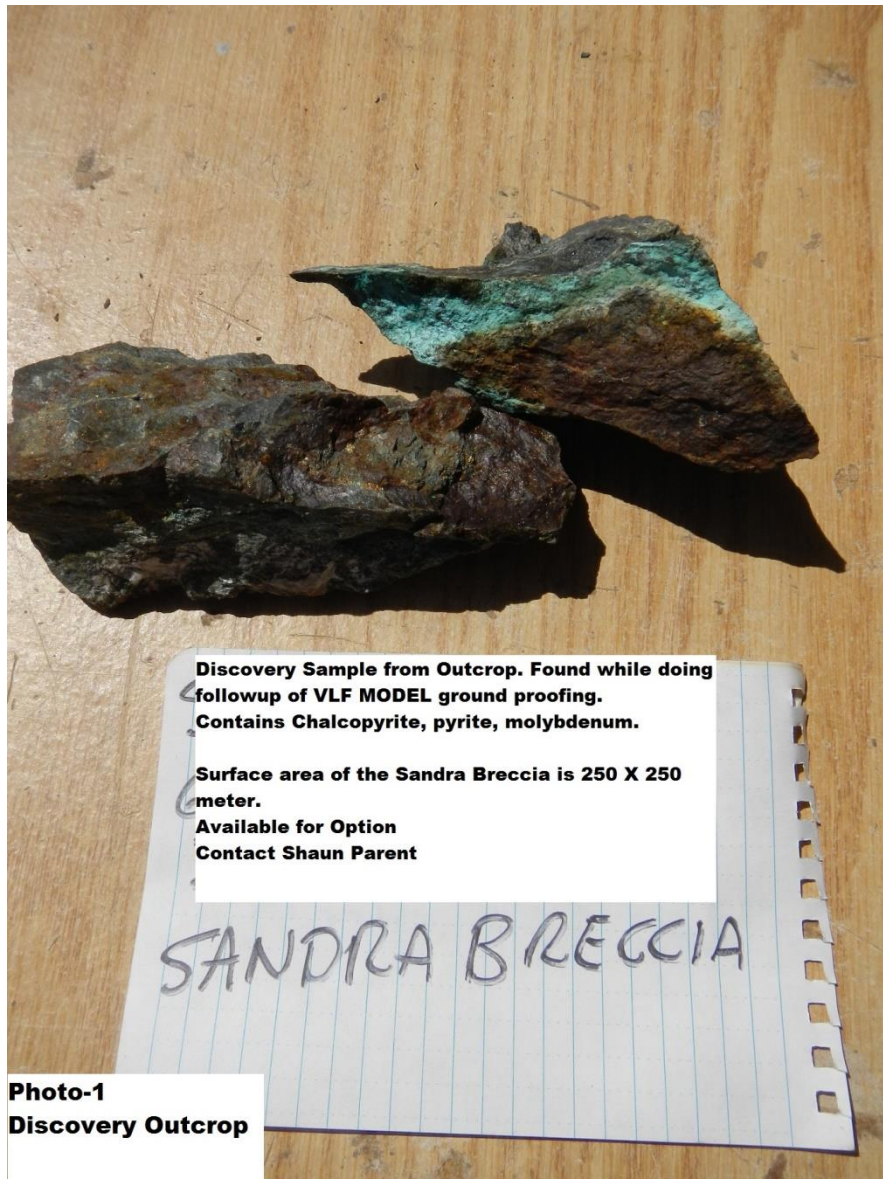


Figure 8 Photo: Discovery Outcrop



Conclusions and Recommendations

The Ground VLF Survey was successful with

- Discovery of a new mineralized outcrop on line SB4E (Figure 7 and photo 8)
- Several other VLF Trends
- Using the VLF 2D MF VLF processing software
- Further processing of VLF data to construct a cross section model similar to Figure 7.
- The discovery of a new Breccia pipe in an area that has been explored since 1953
- Follow up of VLF trends
- Prospecting and sampling of outcrops near VLF trends

List of References

Geonics Ltd. (1997): Operating Manual for VLF Em-16

McNeil, J.D. and Labson; (1991): Geological Mapping using VLF radio fields. In Nabghian, M.N Ed, Electrical Methods in Applied Geophysics 11. Soc. Expl. Geoph, p.p. 521-640

Sayden, A.S, Boniwell, J.B; (1989): VLF Electromagnetic Method, Canadian Institute of Mining and Metallurgy, Special Volume 41 p.p. 111-125 of VLF-EM Data

Monteiro Santos, F.A; (2012): VLF 2D V1.2 A program for 2D inversion

Ontario Geological Survey (1990): Airborne electromagnetic and total intensity magnetic survey, Batchawana Area, Ontario. Ontario Geological Survey Map 81447 Scale 1:20,000

Certificate of Qualifications

I, Shaun Parent, P. Geo (LTD.) residing at 282 B Whispering Pines Road, Batchawana Bay, Ontario do certify that:

- I am a consulting Geoscientist with Superior Exploration, Adventure & Climbing Co. Ltd. which provides VLF Survey-Interpretation-Modelling using our VLF2DMF Software for the Mining Sector worldwide.
- I am the registered owner of Claim 4266871
- I graduated with a Geological Technician Diploma from Sir Sandford Fleming College in 1986.
- I graduated with a BSc. from the University of Toronto in 1986
- I am a member in good standing with the Association of Professional Geoscientists of Ontario #1955 and a member of the Prospectors and Developers Association of Canada.
- I have been employed continuously as a Geoscientist for the past 26 years since my graduation from University.
- The nature of my involvement with this assessment report was to carry out the VLF Survey as well as to do the interpretation of the VLF using the EMTOMO VLF2D Software of which I have been developing with the software designer Fernando Santos of the University of Lisbon, Portugal.

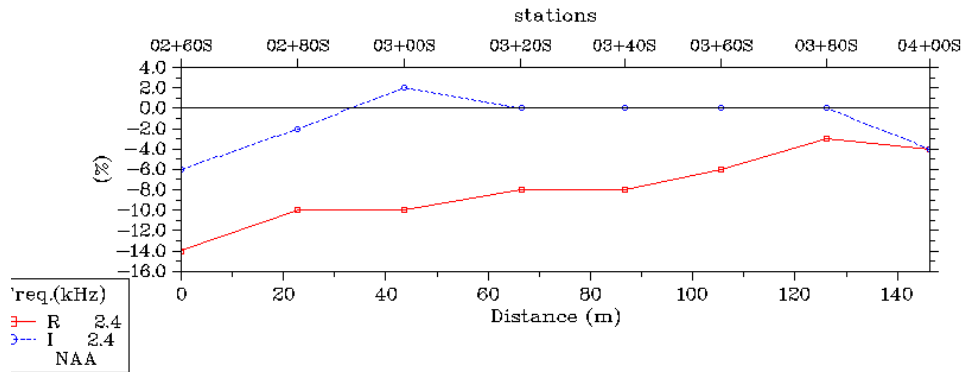
Dated this 20th day of February 2016

Shaun Parent, P. Geo (Limited)

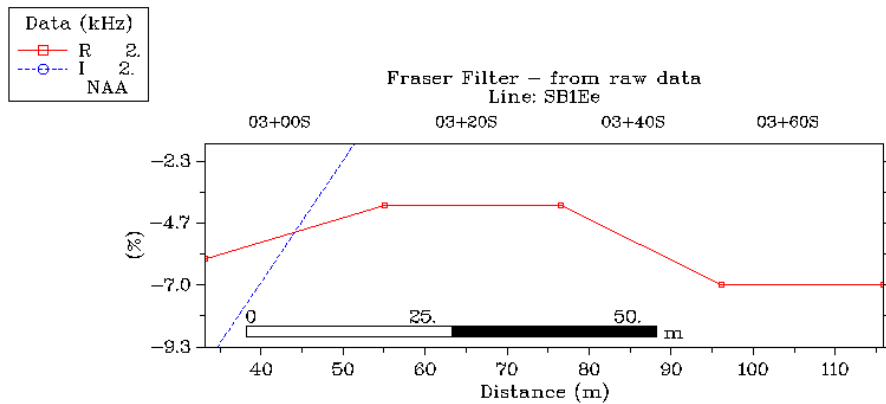
APPENDIX A Line SB1Ee

Line SB1Ee Raw Data Profile

VLF-EM raw data
Line: SB1Ee



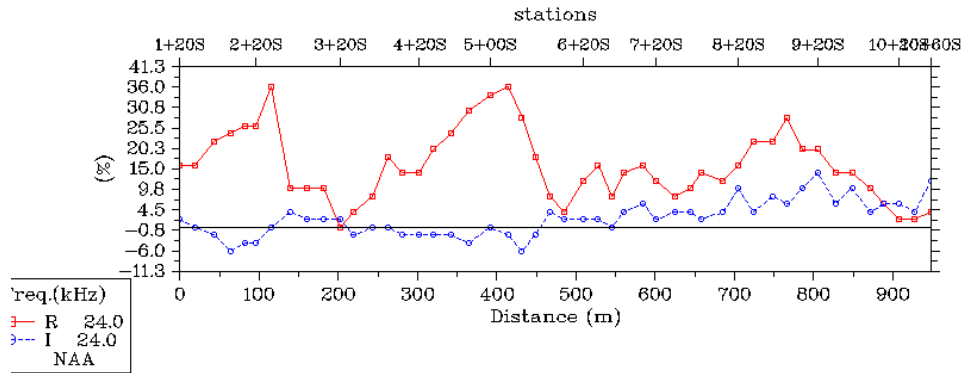
Line SB1Ee Fraser Filter Profile



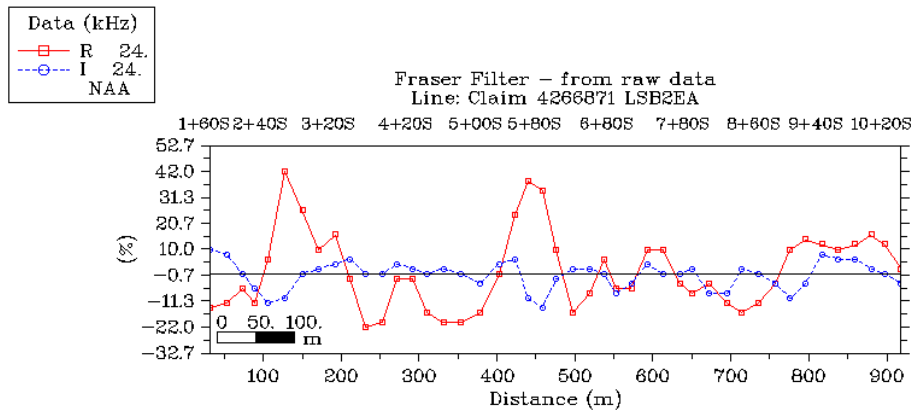
APPENDIX B *Line SB2Ee*

Line SB2Ee Raw Data Profile

VLF-EM raw data
Line: Claim 4266871 LSB2EA



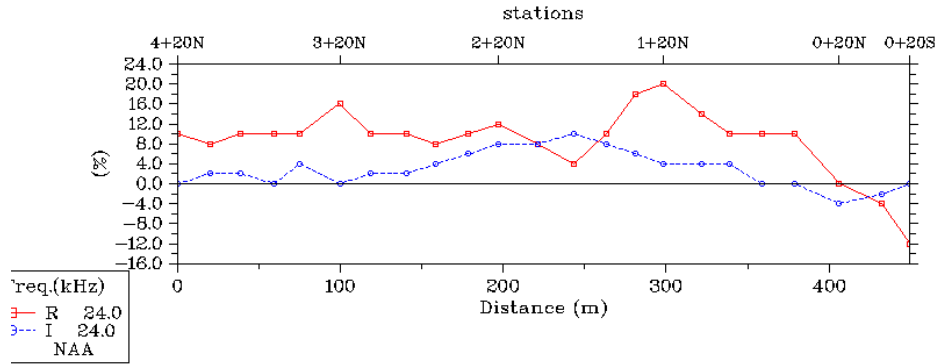
Line SB2Ee Fraser Filter Profile



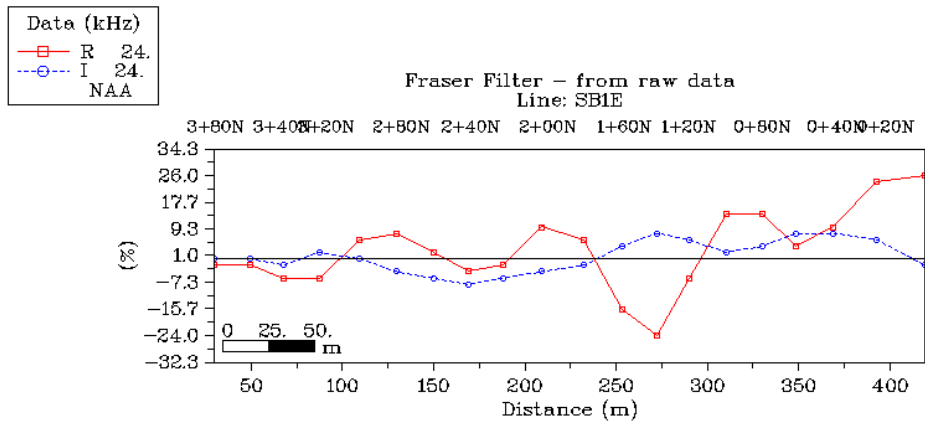
APPENDIX C *Line SB1E*

Line SB1E Raw Data Profile

VLF-EM raw data
Line: SB1E



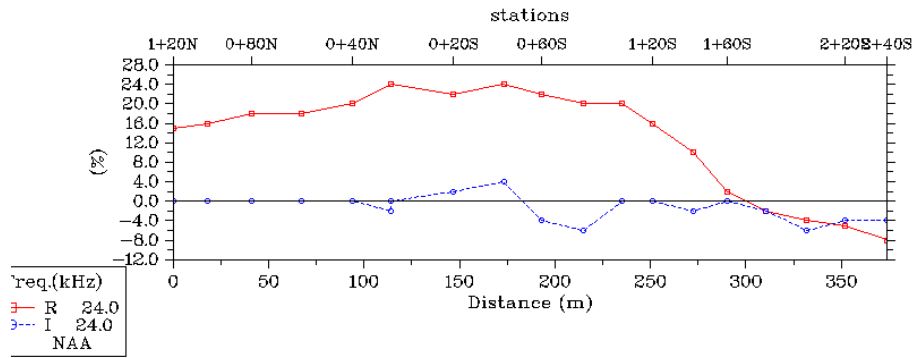
Line SB1E Fraser Filter Profile



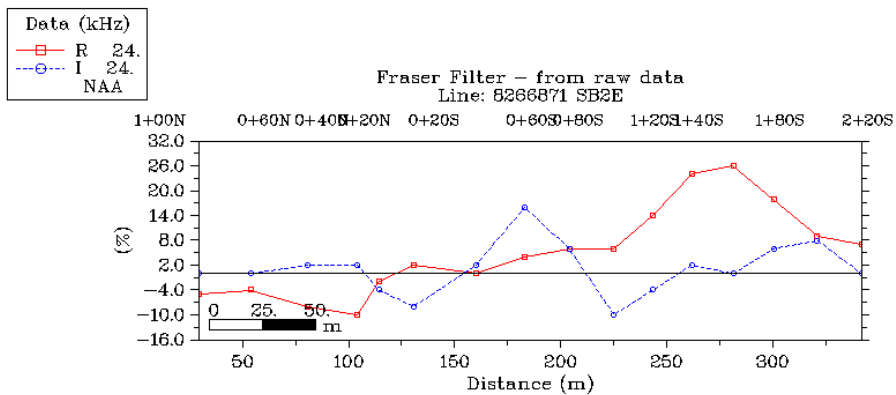
APPENDIX D *Line SB2E*

Line SB2E Raw Data Profile

VLF-EM raw data
Line: 8266871 SB2E



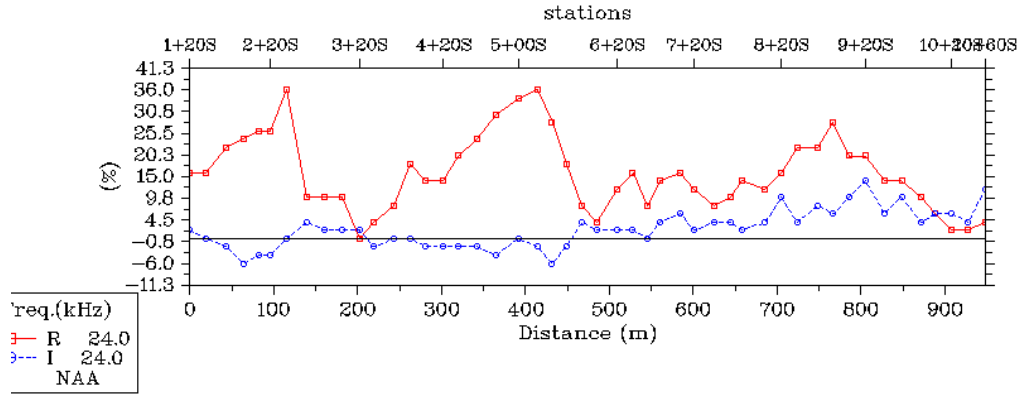
Line SB2E Fraser Filter Profile



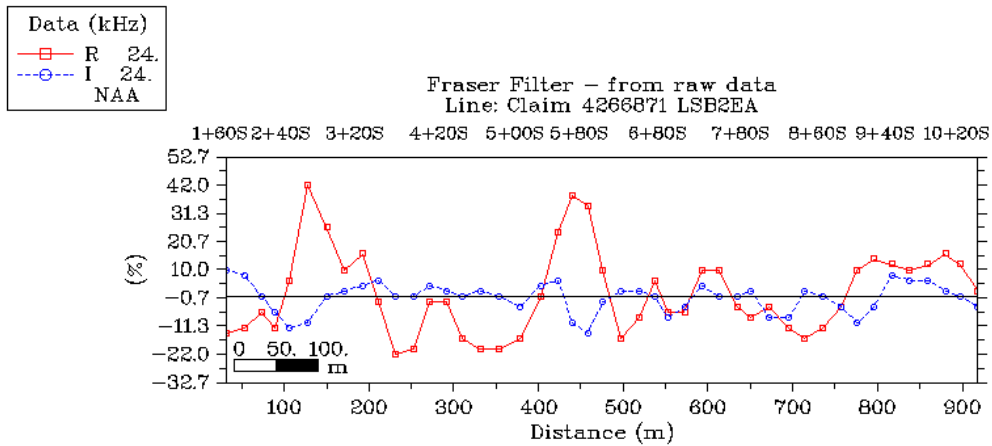
APPENDIX E Line SB2EA

Line SB2EA Raw Data Profile

VLF-EM raw data
Line: Claim 4266871 LSB2EA



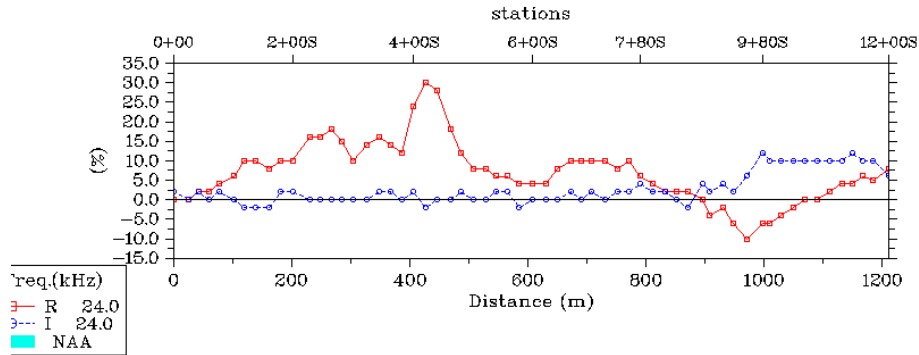
Line SB2EA Fraser Filter Profile



APPENDIX F Line SB3E

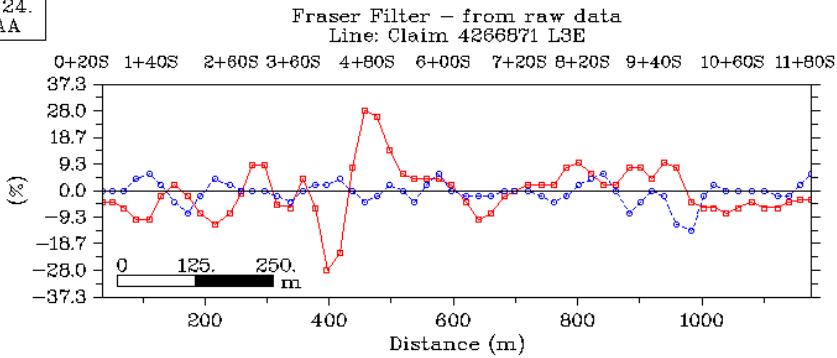
Line SB3E Raw Data Profile

VLF-EM raw data
Line: Claim 4266871 L3E



Line SB3E Fraser Filter Profile

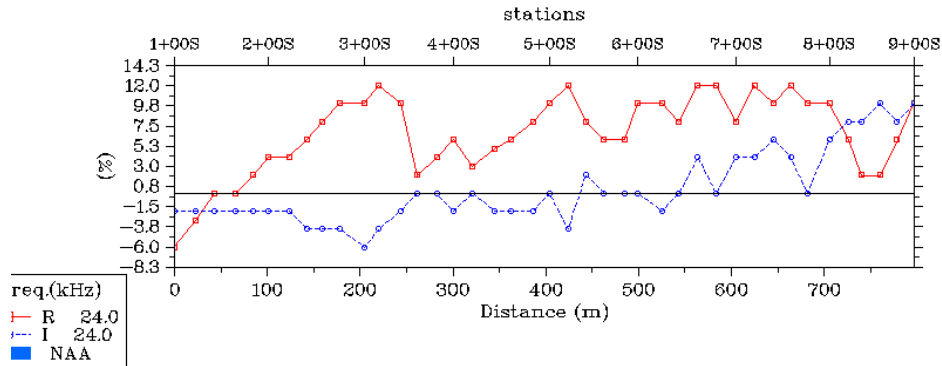
Data (kHz)
R 24.
I 24.
NAA



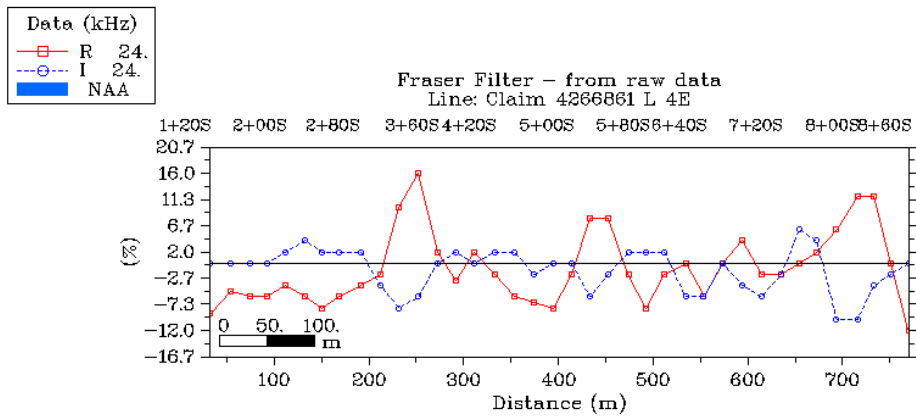
APPENDIX G Line SB4E

Line SB4E Raw Data Profile

VLF-EM raw data
Line: Claim 4266861 L 4E



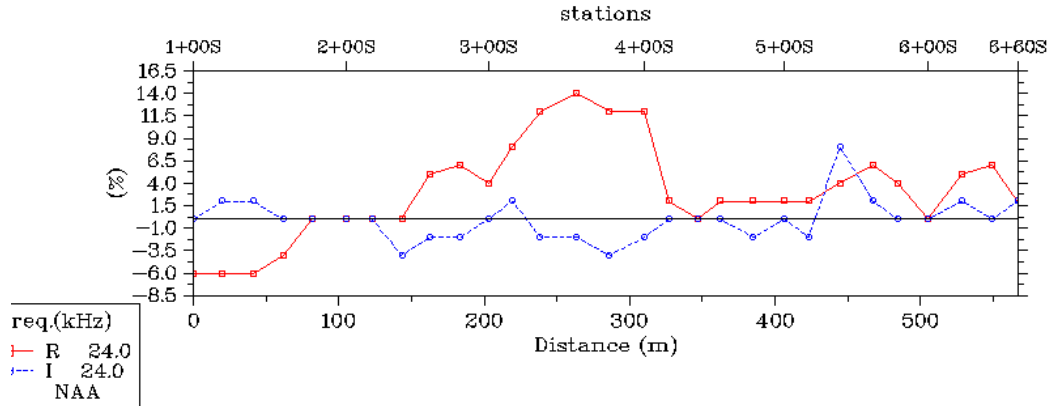
Line SB4E Fraser Filter Profile



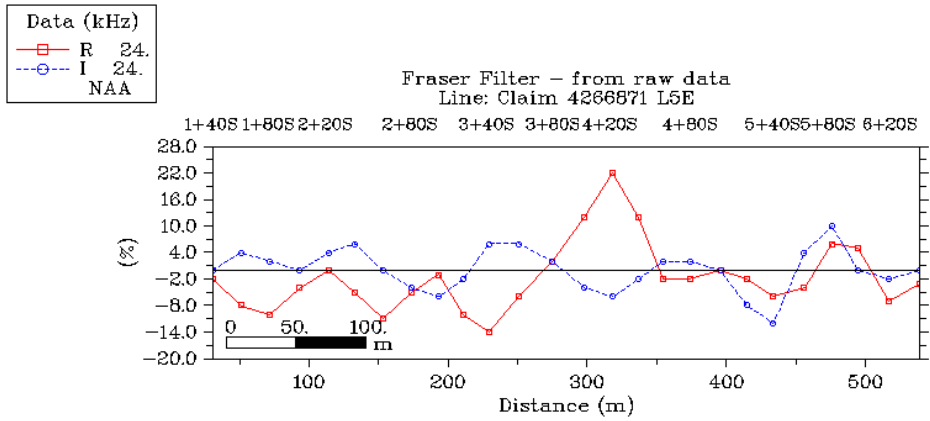
APPENDIX H *Line SB5E*

Line SB5E Raw Data Profile

VLF-EM raw data
Line: Claim 4266871 L5E



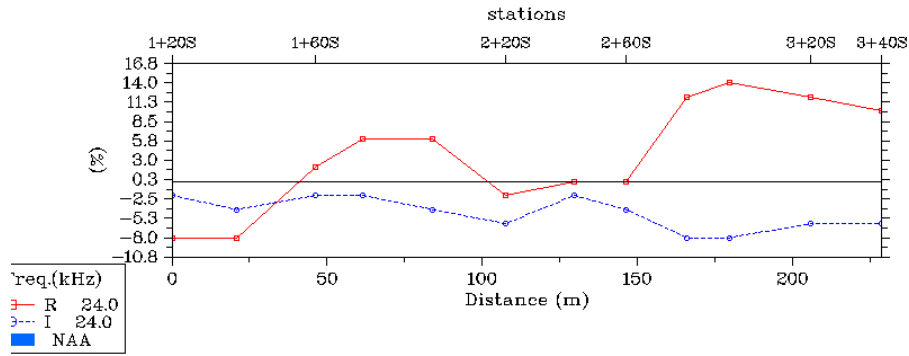
Line SB5E Fraser Filter Profile



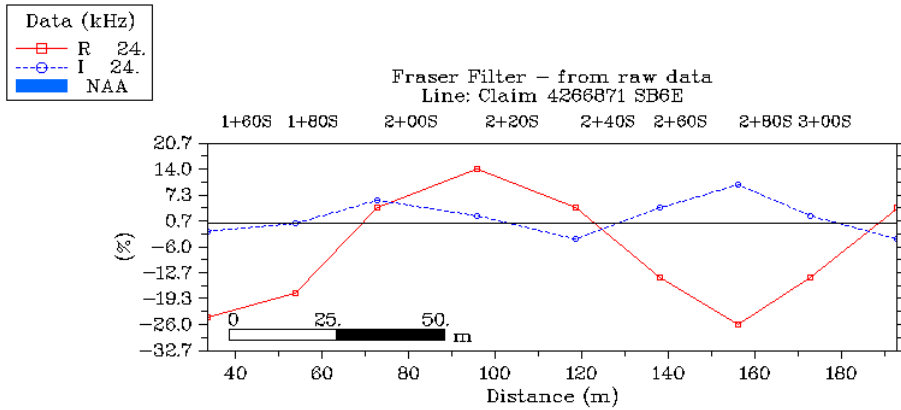
APPENDIX I Line SB6E

Line SB6E Raw Data Profile

VLF-EM raw data
Line: Claim 4266871 SB6E



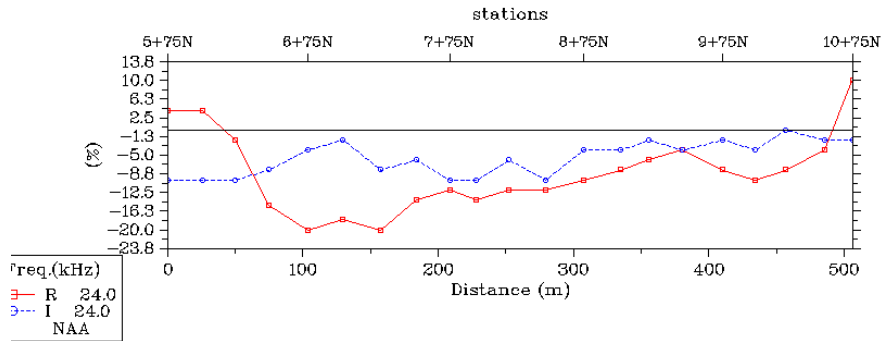
Line SB6E Fraser Filter Profile



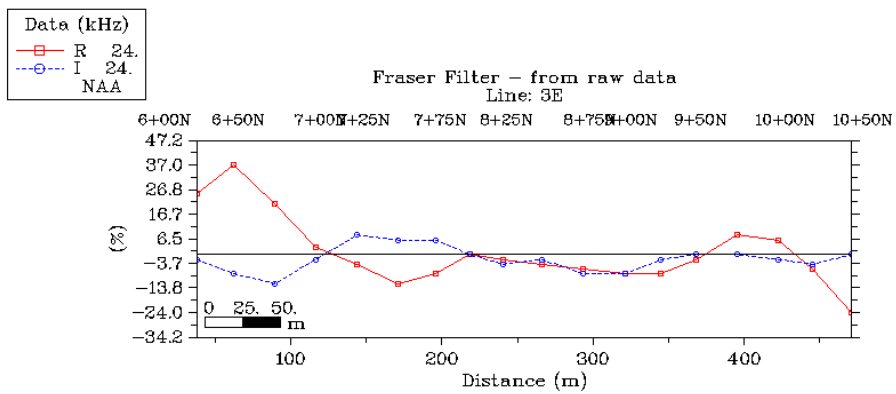
APPENDIX J Line 3E

Line 3E Raw Data Profile

VLF-EM raw data
Line: 3E



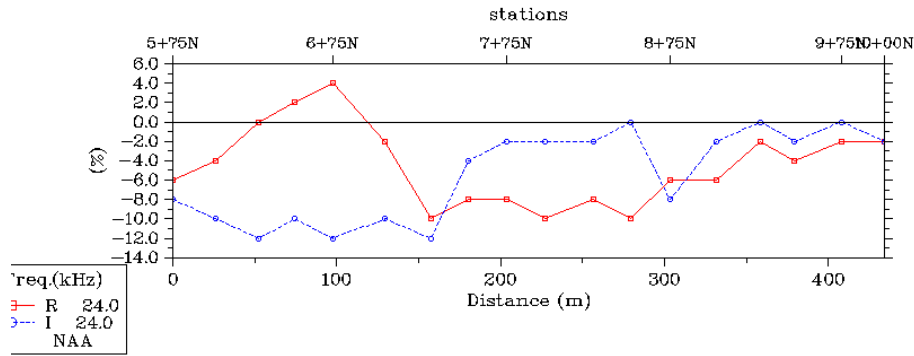
Line 3E Fraser Filter Profile



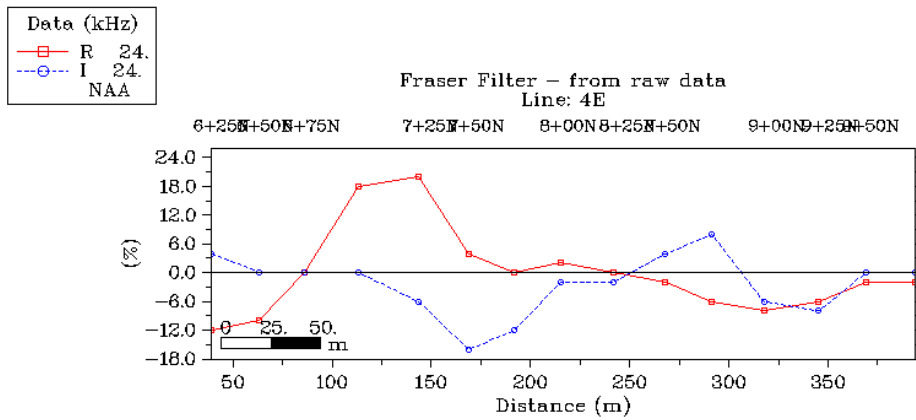
APPENDIX K Line 4E

Line 4E Raw Data Profile

VLF-EM raw data
Line: 4E



Line 4E Fraser Filter Profile



APPENDIX L EM16 Specifications

EM16 SPECIFICATIONS

MEASURED QUANTITY	Inphase and quad-phase components of vertical magnetic field as a percentage of horizontal primary field. (i.e. tangent of the tilt angle and ellipticity).
SENSITIVITY	Inphase: $\pm 150\%$ Quad-phase: $\pm 40\%$
RESOLUTION	$\pm 1\%$
OUTPUT	Nulling by audio tone. Inphase indication from mechanical inclinometer and quadphase from a graduated dial.
OPERATING FREQUENCY	15-25 kHz (15-30 kHz optional) VLF Radio Band. Station selection done by means of plug-in units.
OPERATOR CONTROLS	ON/OFF switch, battery test push button, station selector switch, audio volume control, quadrature dial, inclinometer.
POWER SUPPLY	6 disposable 'AA' cells.
DIMENSIONS	55 x 21.5 x 28 cm
WEIGHT	Instrument: 1.8 kg Shipping: 8.35 kg

CAUTION:

EM16 inclinometer may be damaged by exposure to temperatures below -30°C . Warranty does not cover inclinometers damaged by such exposure.

APPENDIX M **Operating Manual for EM16 VLF-EM**
(enclosed)



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OPERATING MANUAL
for
EM16 VLF-EM

June 1997