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METALLICA MINERALS
TEM SURVEY RESULTS AND PROPOSED DRILL TARGETS FOR THE PROSPECT PROJECT.

R.J. Angus

August 2006

Submitted to : Patrick Smith
Exploration Manager
Metallica Minerals Ltd
Brisbane, QLD.

Report RG-MM03

Contents

Figures

1. Introduction

Ground time-domain electromagnetics (TEM) surveys were completed at the Prospect Project in August 2006 over previously defined airborne electromagnetics (AEM) anomalies.

This report outlines the specifications and results of those surveys and includes modelling of two targets for drill testing.

2. TEM Survey Results & Target Modelling

A total of five lines of TEM were completed over three areas at Prospect. Complete survey specifications including coverage details are in the Appendix, and the digital data is included on a data CD supplied with this report.

Also provided on the data CD are PDF and JPG plot files which show the TEM data in profile form, and also a conductivity-depth image (CDI) of the data. The CDI is a transformation of each TEM channel to a conductivity and depth, and creates a conductivity pseudo-section that allows for a fast initial interpretation of the data. The CDI's were created using the Emax software package (Fullagar, 2005).

2.1. Warrior

Two lines of ground TEM were completed over the Warrior AEM target in the north of the Prospect survey area. As little is known about the geological strike in this area, plus the occurrence of AEM anomalies on both EW flight lines and the NS tie line, one line of TEM was oriented NS (Line 1) and the other was oriented EW (Line 2).

The Line 1 TEM results show a significant late-time anomaly between 7918250N and 7919100N (ie over 800m long). This anomaly is suggesting an extremely conductive target with a very high time constant of over 30 ms. The CDI is suggesting that the source is strongest in the south and has a depth to the top of 100m at the north end and up to 200m at the south end. Line 2 is located over the north end of the anomaly on line 1 and confirms that the EM source is around 300m wide.

Note also that the TEM data suggests that the conductive overburden is less than 50m thick at Warrior.

In order to design drill holes to test the anomaly, the TEM data was imported into the industry standard EM processing and modelling software Maxwell. This allows multiple lines of EM data to be modelled using plate-like filament conductors as the EM sources.

The modelling results for Warrior are presented in Figure 1 which shows selected late time observed data as black profiles, the model response for the same channels in red profiles, the modelled EM target, and proposed drill holes to test this target. A number of views of the model are included to illustrate it's geometry.

The EM target is modelled as a flat-lying sheet that dips shallowly to the south. This suggests that Line 1 was surveyed along the dip direction of the target explaining why the anomaly on this line is over 800m long. The depth to the target agrees with the indication from the CDI, ie 100m at the north end and 200m at the south end.

Three drill holes have been proposed to test this target. Note that hole DH_W1 is located towards the south of the EM target to test the most conductive part of the anomaly. It is highly recommended that holes drilled to test this EM target be cased with PVC to enable subsequent surveying with down-hole electromagnetics (DHEM). The DHEM surveys will indicate whether the conductive target has been intersected, and if not, what direction the conductor actually is.

Full drill hole specifications are included in Section 3.

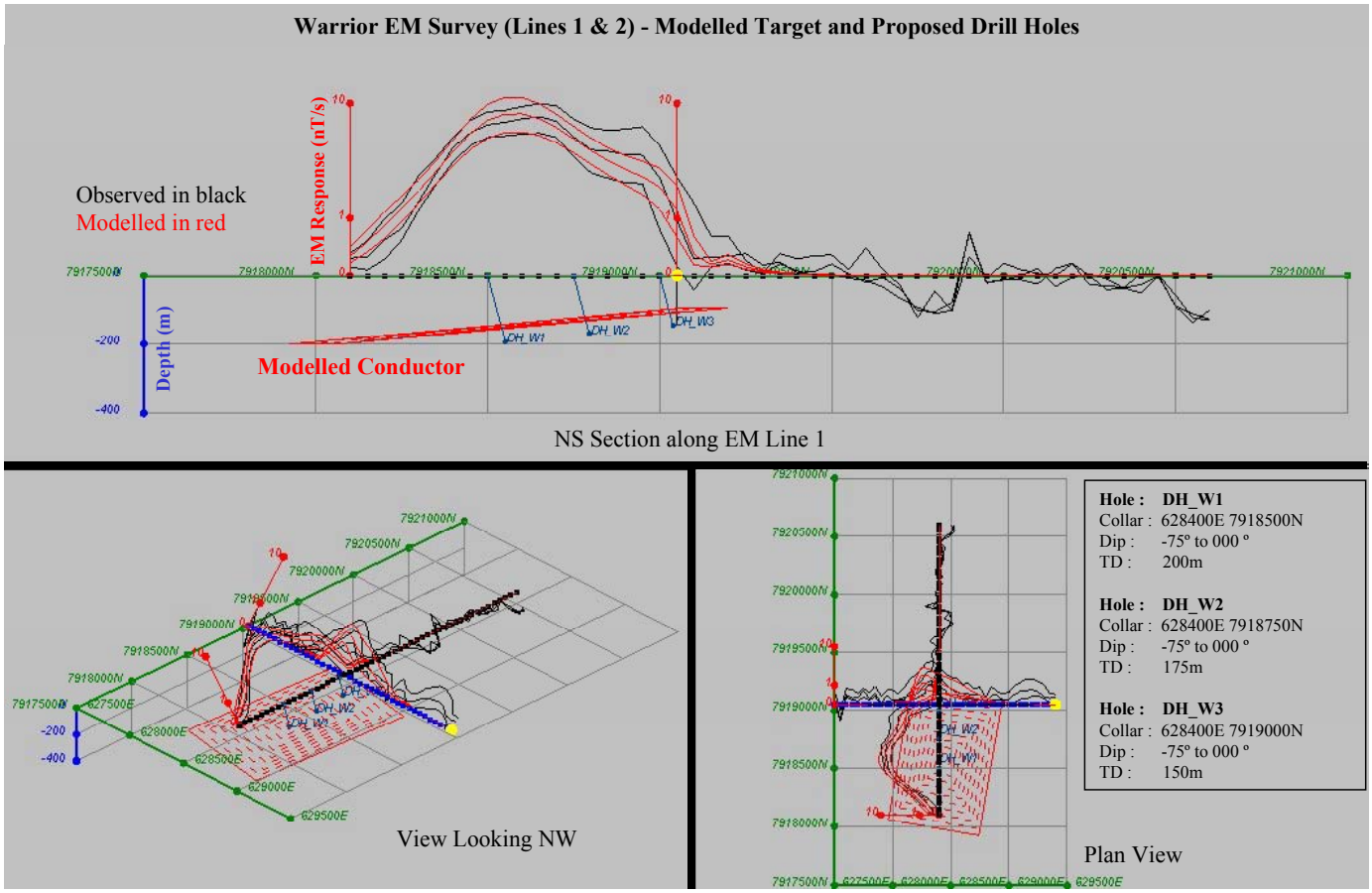

Figure 1. Warrior EM Target – Modelled target and proposed drill holes.

2.2. Hidden One

The Hidden One AEM target is a strong anomaly on the southern most line of the AEM survey (Angus, 2006). Initially only one EW line of TEM (Line 3) was completed over this target, but following some initial modelling work a second NS line (Line 5) was surveyed to assist in determining the orientation of the target.

An excellent late-time anomaly was observed on both these lines with the strongest response on the NS Line 5 having a time constant of about 8ms. The CDI sections indicate conductive cover of about 50m thickness with the buried conductive target from about 100m below the surface.

Modelling of the Hidden One TEM target proved more difficult than for Warrior. A number of different orientations for the target plate proved to be possible. In general the modelled plates were flat lying at a depth of about 100m, or dipping to the south, with dimensions of 300-400m long and 200-300m wide. Two of the final models are presented in Figure 2 which again has variously oriented views of the model. The pink plate is almost flat lying, while the blue plate dips at about 30° to the SW.

The two drill holes proposed are designed to test the majority of the possible EM plates that were modelled for the Hidden One target. Note that DH_HO1 is directed towards the east, while DH_HO2 drills towards the north. Again, casing of these holes with PVC and subsequent completion of DHEM surveys is highly recommended.

Full drill hole specifications are included in Section 3.

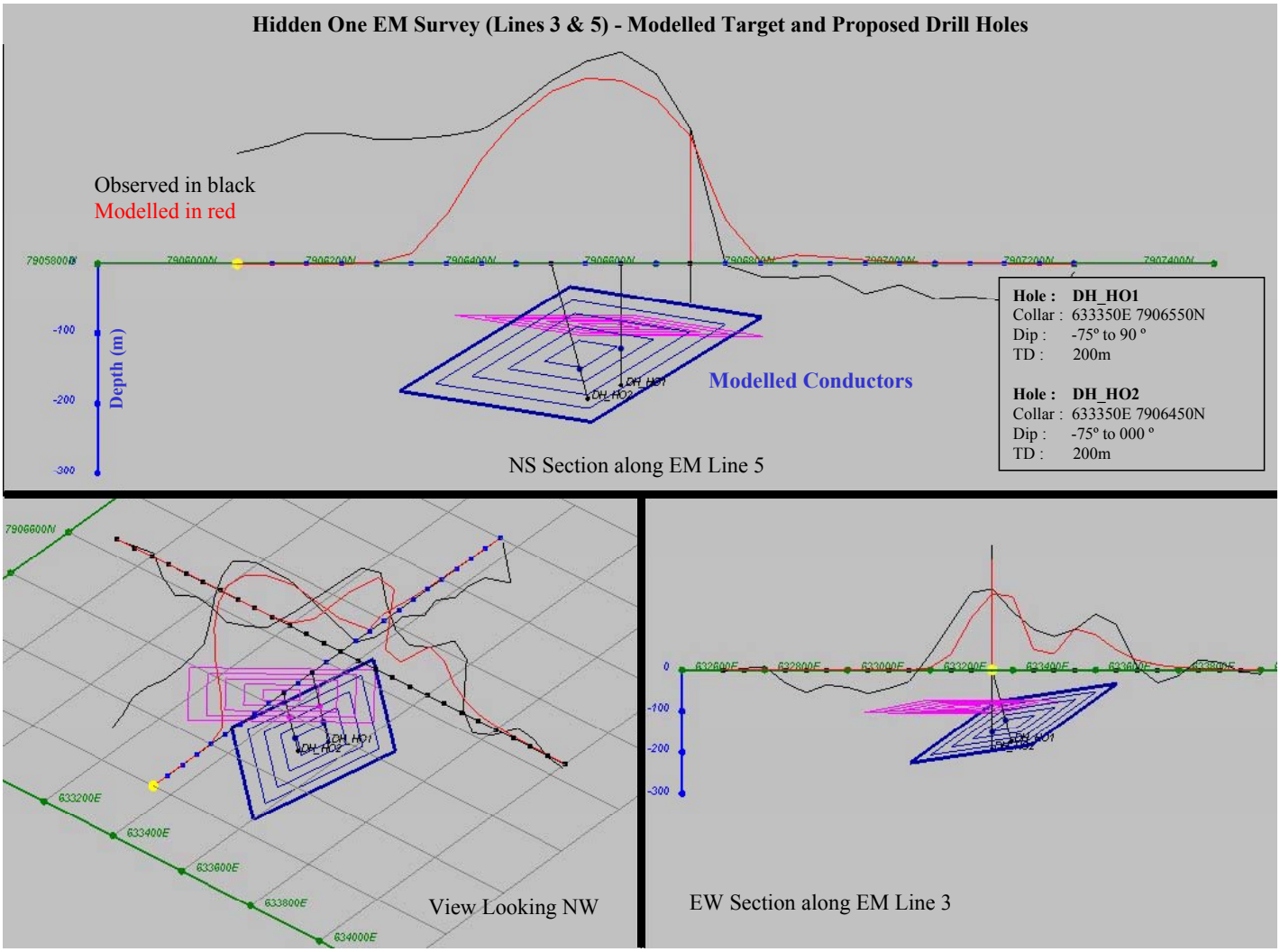

Figure 2. Hidden One EM Target – Modelled target and proposed drill holes.

2.3. Prospect Bore

A single line of TEM (Line 4) was completed across the Prospect Bore AEM anomaly which was originally selected by Wolfgram & Sykes (2005) as an "anomalous response but probably just overburden variation".

This ground TEM survey results shows conductive overburden about 50-60m thick over the western half of the line that thickens to 60-80m over the eastern half of the line. This confirms that the AEM feature seen at Prospect Bore is related to the variations in the overburden thickness (ie an edge effect).

Prospect Bore can thus be discounted as an EM target.

3. Proposed Drill Hole Specifications

The following table lists the specifications for the proposed drill holes at the Warrior and Hidden One targets. Note that all coordinates use the WGS84/SUTM54 coordinate system.

It is highly recommended that all holes are lined with PVC casing to enable subsequent DHEM surveying.

Hole ID	Prospect	East	North	Dip	Azim	Depth
DH_W1	Warrior	628400E	7918500N	-75°	000°	200m
DH_W2	Warrior	628400E	7918750N	-75°	000°	175m
DH_W3	Warrior	628400E	7919000N	-75°	000°	150m
DH_HO1	Hidden One	633350E	7906550N	-75°	090°	200m
DH_HO2	Hidden One	633350E	7906450N	-75°	000°	200m

4. References

Angus, R. J., 2006, Review of Metallica Minerals Geotem Surveys from the Burdekin (Norninco South), Greenvale South, and Prospect Projects. Rama Geoscience Report RG_MM01 for Metallica Minerals.

Fullagar, P., 2005, Emax User Guide.

Wolfgram, P. & Sykes, S., 2005, Job 1746: GEOTEM Survey for Metallica Minerals Ltd. Anomaly Picking Notes.

5. Appendix : Prospect TEM Survey Specifications

TEM Surveys completed by Outer Rim Exploration, August 2006

Survey Coverage (WGS84/SUTM54) :

Line 1	628400E	7918100N to 7920600N	Warrior
Line 2	7919050N	627500E to 629400E	Warrior
Line 3	7906650N	632700E to 634000E	Hidden One
Line 4	7910250N	630500E to 631800E	Prospect Bore
Line 5	633350E	7906000N to 7907200N	Hidden One

Contractor : Outer Rim Exploration
Equipment : Crone Pulse EM
Survey Config : Moving In-Loop
Tx Loop Size : 100m x 100m
Station Spacing : 50m
Time Base : 150 msec
Tx Frequency : 1.67 Hz
Rx Equiv Area : 4100 m^2

Data Formats : *.PEM : Raw Crone PEM dump file
*.TEM : Amira format TEM file
*.CHN : Channel Times file

*.PDF : Plots of TEM Profile and CDI (PDF Format)
*.JPG : Plots of TEM Profile and CDI (JPG Format)

OUTER-RIM EXPLORATION SERVICES

ABN 88 104 028 417

Geophysical Contracting Services

100% Australian Owned

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(PO Box 3323)
NORMAN PARK, QLD. 4170

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Email: mail@outer-rim.com.au

Volume 1 of 1

Client	:	Metallica Minerals Ltd
Prospect	:	Kokomo and Prospect
Area	:	Greenvale and Croydon, Qld.
Survey	:	Surface and Borehole PEM Survey
Survey Period	:	26th July to 13th August, 2006
Operator	:	Muhamad Humam

Loop TX4 :300 x 300m
306850E, 7944650N; 307150E, 7944650N
306850E, 7944350N; 307150E, 7944350N.
Current :20 Amps
Time Base :50 ms
Ramp Time :1 ms
Sync :Cable

Hole No. **:EM-001**
307025E, 7944480N
Depth :180m
Channels :36
Components :Z,X,Y

1 Survey day $2000.00
2 Field Assist. day $ 600.00

04-08-06 We had to wait for confirmation of the DHEM data from Metallica before we left from Greenvale. We got there about 11.00am, packed up all the gear and drove to Croydon, arriving about 7.30pm.

½ Standby day $ 500.00
¾ Mob. day $ 750.00

05-08-06 We got breakfast and lunch at 7.00am (they didn't open until 7.00am) and drove about two hours to Prospect station. We spoke to the farmer then, had to go back to Esmeralda station to let them know as well, as some of the EM lines are on their property. We then drove to the first line, set up and read ten stations. We then packed up and returned to Croydon by 7.00pm.

SURVEY PARAMETERS
Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L01 (628400E)**
7918700 to 7919150N (500m)
Channels :42
Components :Z

1¼ Survey day $2375.00
2½ Field Assist. day $ 750.00

06-08-06 After getting breakfast and lunches, we left for site at 7.30am and arrived at 9.30am. We set up and continued to read line L01. We finished up and returned to Croydon at 5.15pm (a little earlier so we could get some food for breakfast and lunch from the shop for the next few days).

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L01 (628400E)**
7919150 to 7919950N (900m)
Channels :42
Components :Z

1 Survey day $1900.00
2 Field Assist. day $ 600.00

07-08-06 We drove out to site at 6.30am and completed L01. We then moved to line L02, set up and read nine stations before packing up and driving back to Croydon by 7.00pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L01 (628400E)**
7919950 to 7920600N (700m)
Channels :42
Components :Z

Line No. **:L02 (7919050N)**
627500 to 627900N (450m)
Channels :42
Components :Z

1¼ Survey day $2375.00
2½ Field Assist. day $ 750.00

08-08-06 We went out to site at 6.30am and pushed to complete line L02. We packed up and drove back to Croydon at 8.30pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L02 (7919050N)**
627900 to 629400N (1550m)

Channels :42
Components :Z

1½ Survey day $2850.00
3 Field Assist. day $ 900.00

09-08-06 We drove out to site at 7.00am, picked up the loop and all the gear from the previous line and drove to Prospect station. We spoke to the farmer, then went to line L03, set up and read through until we finished at 4.00pm, then drove back to Croydon by 6.15pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L03 (7906650N)**
632700 to 633150N (500m)
Channels :42
Components :Z

1¼ Survey day $2375.00
2½ Field Assist. day $ 750.00

10-08-06 We drove out to site at 7.00am, set up and completed line L03. We then packed up and drove the 5km to line L04. We dropped the gear off and laid out the first loop, ready to survey the following day. We drove back to Croydon by 6.00pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L03 (7906650N)**
633150 to 634000N (900m)
Channels :42
Components :Z

1 Survey day $1900.00
2 Field Assist. day $ 600.00

11-08-06 We drove out to site at 6.50am, set up and completed line L04. We recovered the loop, packed all the gear and dropped it all off at a convenient spot on the way to the next line. We then drove back to Croydon, arriving at 7.30pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L04 (7910250N)**
630500 to 631800N (1300m)
Channels :42
Components :Z

1¼ Survey day $2375.00
2½ Field Assist. day $ 750.00

12-08-06 We left Croydon at 7.00am, re-fuelled and drove out to line L05, picking up the trailer and gear on the way. We set up and completed the line, packed up and drove back to Croydon by 6.30pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L05 (633350E)**
7906000 to 7907200N (1200m)
Channels :42
Components :Z

1 Survey day $1900.00
2 Field Assist. day $ 600.00

13-08-06 We went out to site at 7.00am,,stopped at line L02 and repeated the missing station, plus one either side, then moved to line L01 and extended the line a further 600m. We then packed up and returned to Croydon by 6.00pm.

SURVEY PARAMETERS

Loop Moving :100 x 100m
Current :20 Amps
Time Base :150 ms
Ramp Time :1.5ms
Sync :Cable

Line No. **:L02 (7919050N)**
628300 to 628400N (150m)
Channels :42
Components :Z

Line No. **:L01 (628400E)**
7918100 to 7918700N (600m)
Channels :36
Components :Z

1 Survey day $1900.00
2 Field Assist. day $ 600.00

14-08-06 We drove to the next job. (One day but only half day charged).

½ Mob. day $ 500.00

Appendix

CRONE GEOPHYSICS & EXPLORATION LTD.

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Phone: (905) 270-0096 Fax: (905) 270-3472 www.cronegeophysics.com

3-D PULSE EM - SYSTEM DESCRIPTION

Name of System: Crone Pulse EM (PEM).

Method Employed: TDEM (Time-domain electromagnetics) or TEM (Transient EM).

Survey Types:
- **Surface** - DEEPEM, Large In-Loop, Moving Loop, Moving Coil - 3 components.
- **Borehole** - 3D Borehole PEM - 3 components are measured and oriented.
- **Underground** - 3D Borehole PEM - including flat or up-dipping holes.

Measured Quantity: Rate of change of magnetic field in nanoTesla/second (same as nV/m^2).

Receiver: Fully digital (input is digitized before stacking) with 24 bit dynamic range.

Channels (Gates):
- Typically 20 logarithmic channels in off-time and 1 during ramp (PP).
- Operator can select from several built-in tables including:
  - 10, 20, or 30 channel system (single, double, triple density)
  - 45 channels 4.5 usec wide covering the end of ramp and start of off-time.
  - 42 channels and PP for 150 msec time base.
  - full sampling of ramp and off-time (8 on ramp and full off-time starting at 0 usec).
- Programmable channel positions in the field.

Stacking: 512 to 65536 stacks with spike rejection.

Gain Control: Automatic software control (no selection or correction required).

Rx Operation: Menu-driven software. Large 16x40 character LCD. Full alphanumeric keyboard.

Display: 256 x 128 pixel scrollable graphic LCD for decay curves and profiles in the field.

Data Handling: Solid state storage; multiple files; all files can be appended at any time. Plot, list, sort, delete data. RS232 transmission of all data or only certain files.

Synchronization: Radio, cable, or crystal clock

Current Waveform: Bipolar on-off square waveform with exponential turn-on and ramp off.

Time Base: Off-time plus ramp time.
- 8.33, 16.66, 50, 100 and 150 msec for 60 Hz noise rejection (equivalent base frequencies of 30, 15, 5, 2.5, 1.67 Hz.)
- 10.0, 20.0, 50.0, 100.0 and 150 msec for 50 Hz noise rejection (equivalent base frequencies of 25, 12.5, 5, 2.5, 1.67 Hz.)

Ramp Time: The time required for the current to turn off.
- 500, 1000, or 1500 usec selections for precisely controlled linear turn-off ramps.
- "fast ramp" option turns current off as quickly as possible for a given loop size and current (2 usec or less to a few hundred usec).

Transmit Loop:
- Single turn loop of any dimension (less than 100m x 100m to greater than 2km x 2km).
- Multi-turn 14m diameter loop for near-surface Moving Coil surveys.

Tx Output Current:
- 30 Amps maximum at 160 Volts for 4.8 kWatt system.
- 20 Amps maximum at 120 Volts for 2.4 kWatt system.

Tx Output Voltage:
- 48 to 240 Volts continuously adjustable for 4.8 kWatt system.
- 24 to 120 Volts continuously adjustable for 2.4 kWatt system.

Tx Safety features: Transmitter automatically shuts off when loop is opened. Also shuts off with high instrument temperature and overload. Fuse and circuit breaker overload protection.

Borehole Probes: 32 mm diameter. Pressure-tested for depths of 2500m or more.

Operating Temperature: -40°C to 50°C

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Phone: (905) 270-0096 Fax: (905) 270-3472 www.cronegeophysics.com

3-D PULSE EM - SPECIAL FEATURES

High Power: A new 4.8 kWatt transmitter allows very large loops to be used while maintaining a high current.

Precise Current Ramps: Precisely- controlled linear ramps of fixed duration allow for proper comparisons to be made between data from different loop sizes, and also allows for the step response transformation.

Long Time Base (Low Frequency): A new long time base of 150 msec (1.67 Hz) ensures that very long time constant conductors can be seen in complicated environments.

Step Response: A new step response transformation allows even longer time-constant conductors to be seen by reproducing the response that would be seen in a direct measurement of the step response. Our controlled linear ramps and our standard Primary Pulse (PP) measurement on the ramp are necessary for this calculation.

Fast Ramp Option: A new "fast ramp" option duplicates the response seen from other pulse-type systems, but this does not allow for the step response calculation. We do not recommend fast ramps because they are not as linear as our controlled ramps, they drift in duration as the loop warms up, and there is no advantage in terms of power put into the ground since the *area* under the dB/dt pulse produced by the ramp is the same.

Calculation of Impulse Response: The "fast ramp" response can be calculated (as well as the true impulse response) from our standard linear ramp data.

True Digital Receiver: The Crone receiver is a true digital receiver in that the input is immediately digitized before stacking and binning. This produces the following feature (programmable gate positions) .

Programmable Gate Positions: There is complete freedom of channel (or gate) positions and widths, which can be programmed in the field. There are also numerous built-in tables.

Full Sampling: The entire ramp and off-time can be sampled with contiguous channels if desired.

Current Ramp always Sampled: A Primary Pulse (PP) measurement is always made on the current ramp, which is of great help to ensure proper polarities, and also is crucial for the step response transformation.

High Quality LCD Display: The 256 x 128 pixel LCD on the receiver allows for accurate plots of decay curves and line or borehole profiles on the receiver, and is of great assistance to the operator to monitor noise and anomaly build-up.

No Data Reduction: There is no data reduction for surface surveys and Z-component borehole surveys, so that what is seen on the receiver is what will be seen in the final plots. For 3-D borehole surveys, there is only the correction applied to the direction of the X and Y components to aid interpretation. Gain controls are automatic, so that the output is always in nanoTeslas/sec (= nV/m^2).

Slim-line Probes: A 32 mm probe diameter ensures that virtually all holes can be surveyed with 3-component measurements.

Oriented X and Y Components: X-Y orientation tools accurately orient the X and Y components. This helps tremendously with giving direction to off-hole conductors and to the centre of in-hole conductors.

Reliable, Durable and Portable Equipment: The PEM system has been in use since the early 1970's under temperature extremes of -40°C to +50°C, in desert, jungle, arctic, mountainous, and underground mining conditions.

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3-D PULSE EM - APPLICATIONS

- Base metals ⇒ direct detection of:
  - ◊ volcanogenic massive sulphide (VMS) deposits
  - ◊ magmatic sulphide deposits
  - ◊ sedex massive sulphide deposits
  - ◊ higher grade ore within disseminated zones

  ⇒ indirect detection of :
  - ◊ sphalerite and other non-conductors
  - ◊ galena and other poorly connected minerals

  through detection of associated well-connected conductors.

  ⇒ detection of conductive marker zones related to deposits
- Gold ⇒ detection of associated conductors - e.g. pyrite/pyrrhotite
  ⇒ detection of the host - e.g. banded iron formations
- Uranium ⇒ detection of associated graphitic basement conductors
  ⇒ detection of associated conductive alteration zones
- Diamonds ⇒ detection and definition of clay-rich layer overlying kimberlites
  ⇒ locating kimberlites under locally thinned conductive cover

In the ore definition, delineation and production stages of a mining operation, Pulse EM can still be highly effective to:

- Define the boundaries of conductive ore
- Determine the size of intersected conductors and thereby determine whether they are connected to main ore zones.
- Reduce the number of necessary drillholes by exploring between holes.
- Survey underground drillholes - even flat or inclined holes.

Pulse EM can also be used for:

- General geological mapping of conductive structures
  - ⇒ shears, fractures, lineaments
  - ⇒ hydrothermal alteration
  - ⇒ graphite-rich rocks, including graphitic schist, shale, slate, and argillite
  - ⇒ clay alteration and zeolites
  - ⇒ differential and clay weathering
  - ⇒ conductive weathered layer at surface
- Groundwater exploration
- Mapping groundwater contamination plumes and freshwater-saltwater interface
- Geothermal exploration
- Mapping depth and thickness of horizontal strata
- Mapping permafrost thickness

PLOTS

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OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **628400E**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 5, 2006	File name	: L01.PEM
Time Base	: 150.00 ms	# Readings	: 51
Ramp Time	: 1.50 ms	Stn Units	: Metric
# Channels	: 42	Coil Area	: 4100 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 100m X 100m	Receiver	: Digital #109
Current	: 20 Amps	Operator	: M Humam

Loop Coordinates (X,Y,Z)

1. 628350m, 7.91815e+06m, 0m
2. 628350m, 7.91805e+06m, 0m
3. 628450m, 7.91805e+06m, 0m
4. 628450m, 7.91815e+06m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 628400m, 7.9181e+06m, 0m
2. 360deg, 0.1deg, 2500m

Channel Times (usec)

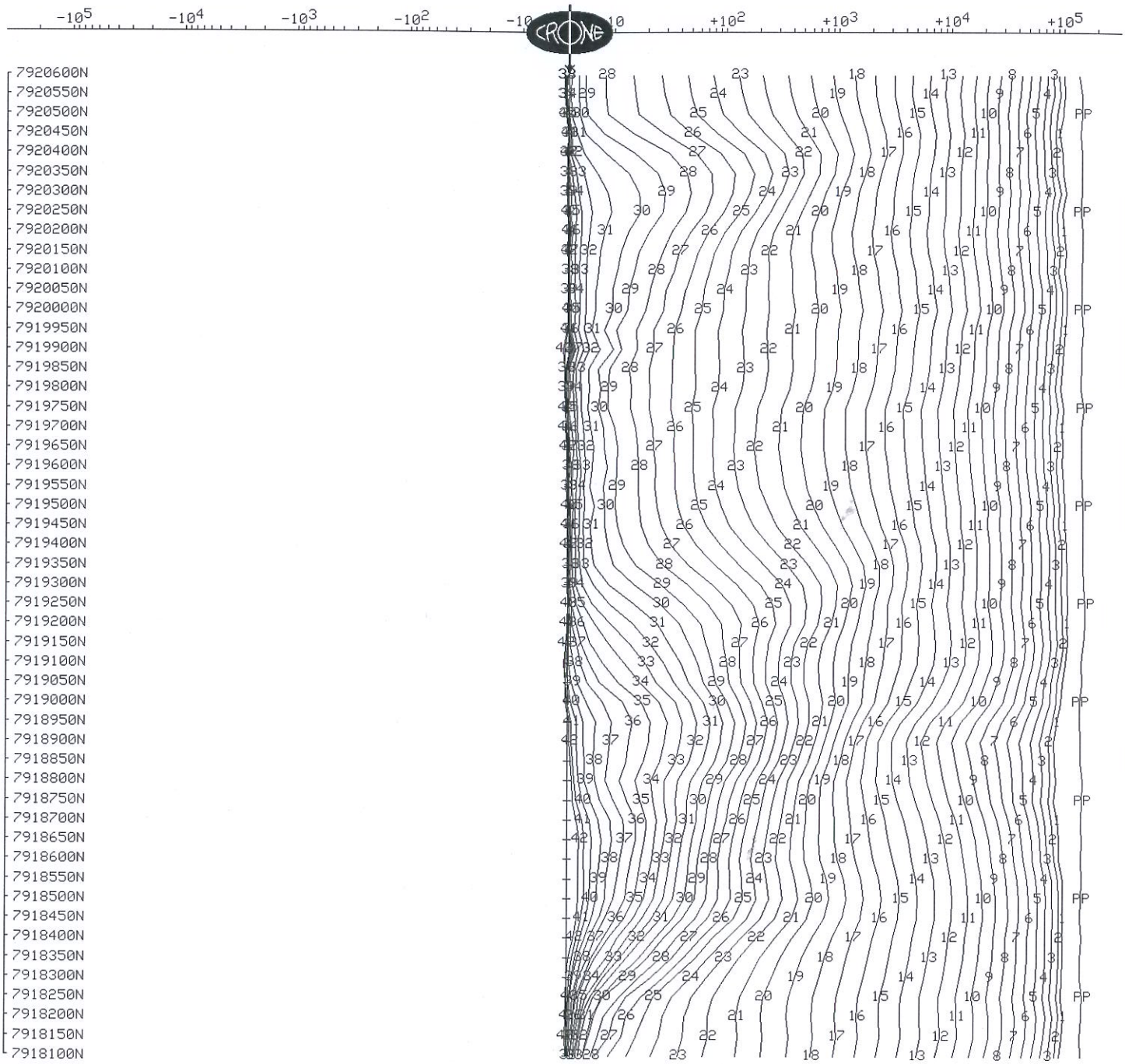
Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	58	54	2	58	72	65
3	72	86	79	4	86	104	94	5	104	126	115
6	126	153	140	7	153	185	169	8	185	225	205
9	225	270	248	10	270	328	299	11	328	396	362
12	396	482	439	13	482	580	531	14	580	702	641
15	702	850	776	16	850	1026	938	17	1026	1242	1134
18	1242	1498	1370	19	1498	1813	1656	20	1813	2187	2000
21	2187	2646	2416	22	2646	3195	2920	23	3195	3861	3528
24	3861	4666	4264	25	4666	5634	5150	26	5634	6808	6221
27	6808	8221	7514	28	8221	9936	9078	29	9936	12000	10968
30	12000	14490	13245	31	14490	17510	16000	32	17510	21150	19330
33	21150	25550	23350	34	25550	30870	28210	35	30870	37290	34080
36	37290	45040	41165	37	45040	54410	49725	38	54410	65730	60070
39	65730	79390	72560	40	79390	95910	87650	41	95910	115800	105855
42	115800	139900	127850								

OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **628400E**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 5, 2006	File name	: L01.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 42 of 42 channels and PP

Scale: 1:15000



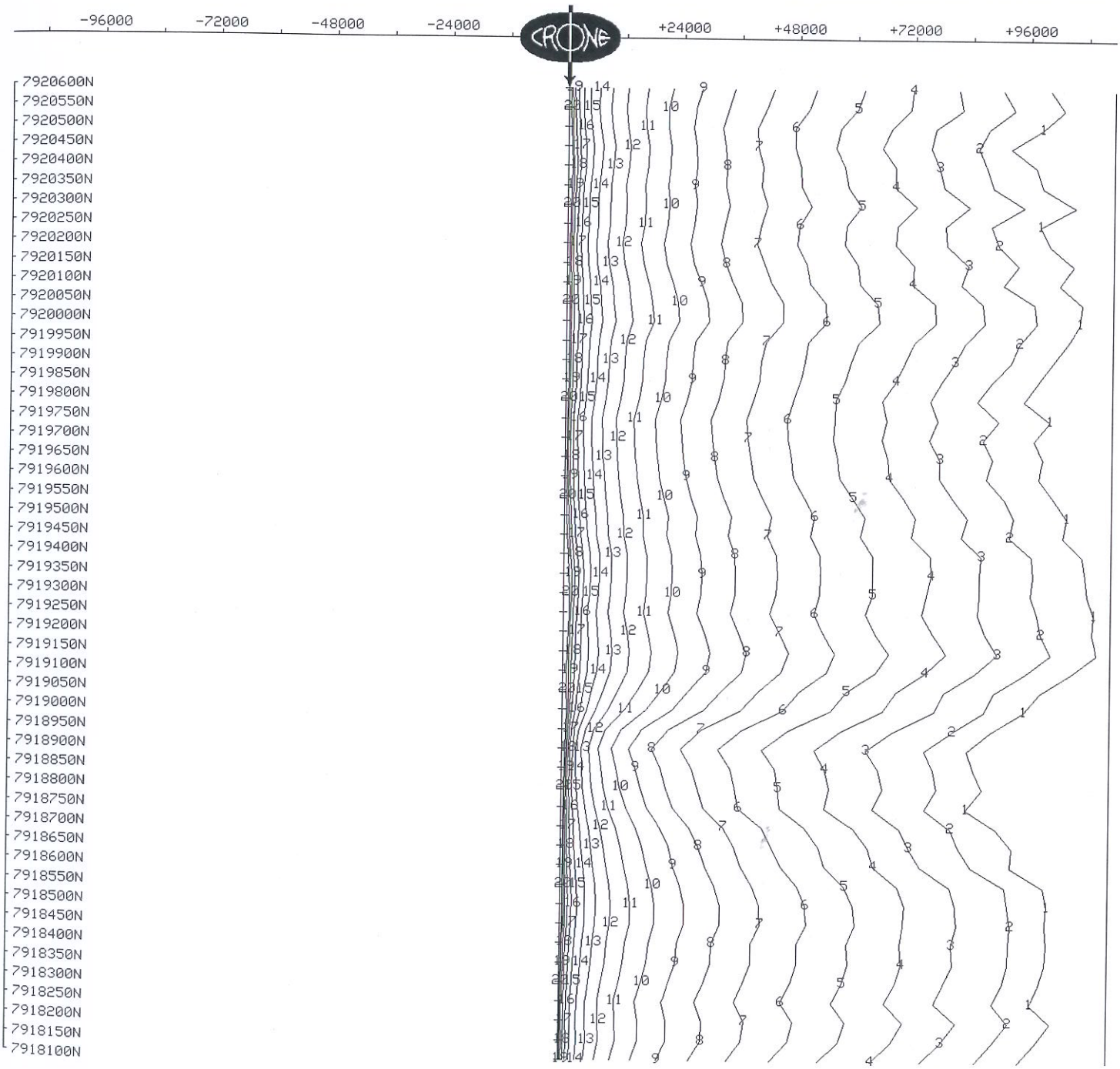
OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **628400E**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 5, 2006	File name	: L01.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 42 channels and PP

Scale: 1:15000

Unit Scale: 1cm = 12000 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

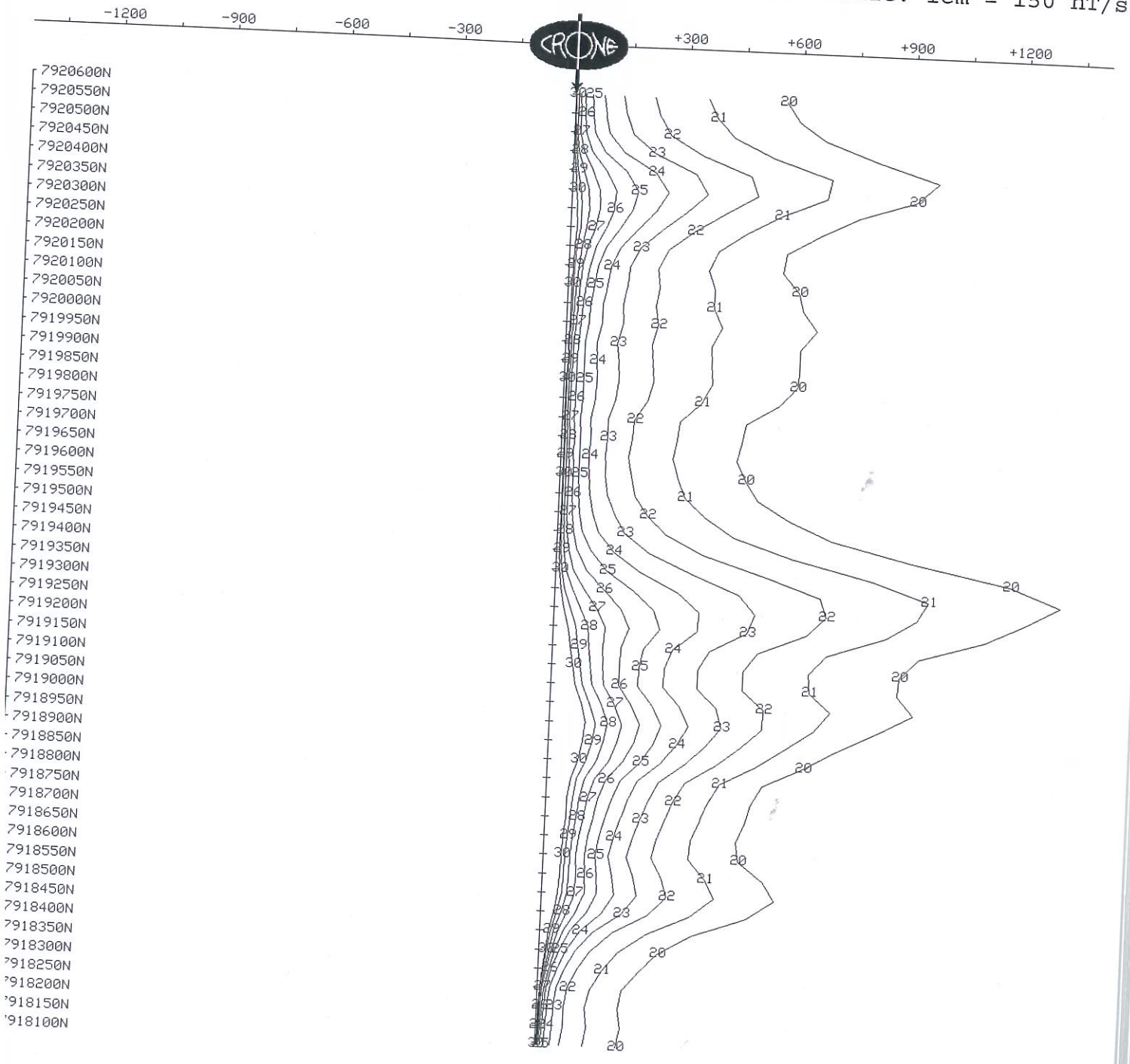
Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 5, 2006

Line : 628400E
Tx Loop : Moving
File name : L01.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 11 of 42 channels

Scale: 1:15000

Unit Scale: 1cm = 150 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

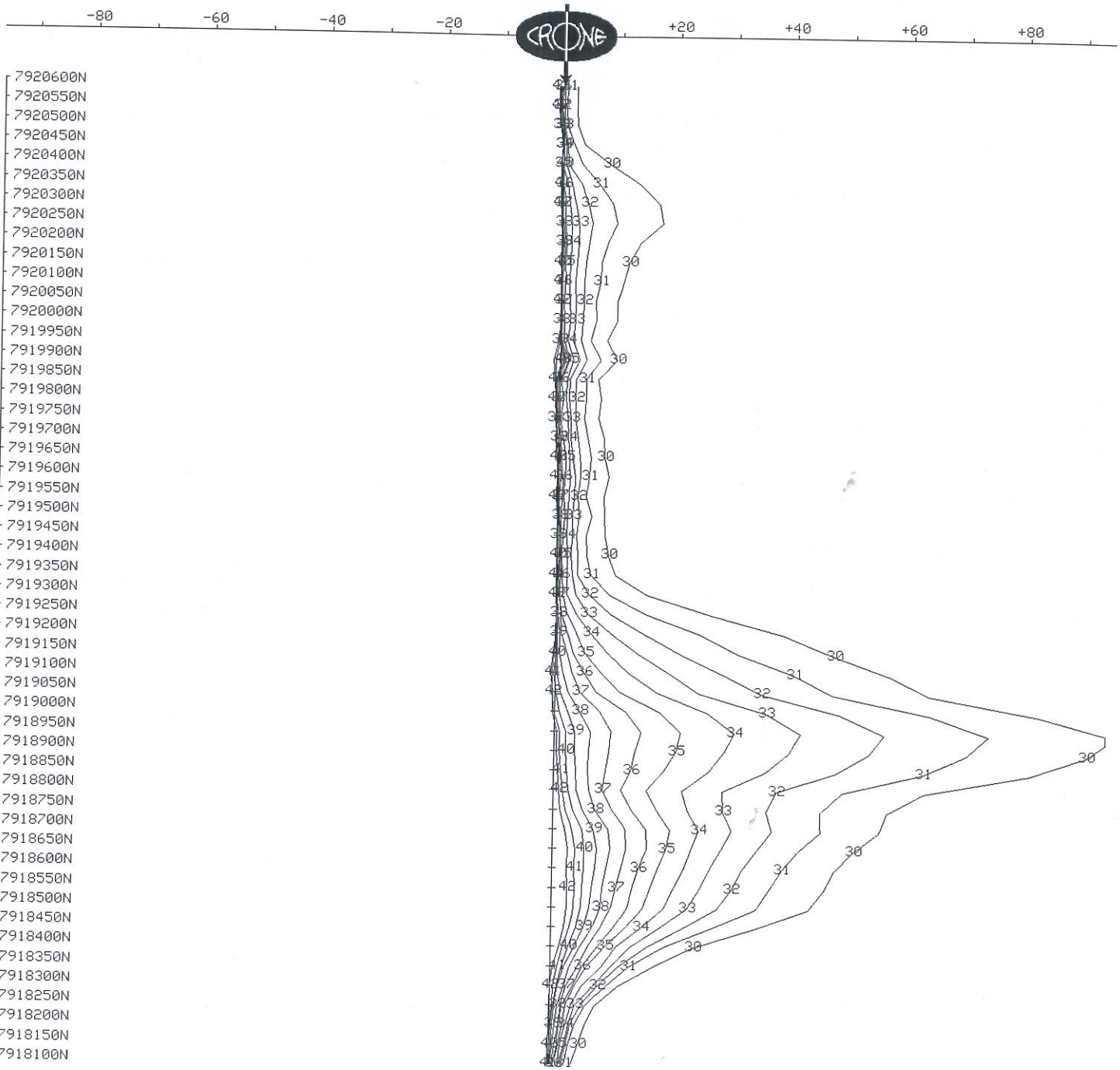
Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 5, 2006

Line : **628400E**
Tx Loop : **Moving**
File name : L01.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 13 of 42 channels

Scale: 1:15000

Unit Scale: 1cm = 10 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **7919050N**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 7, 2006	File name	: L02.PEM
Time Base	: 150.00 ms	# Readings	: 39
Ramp Time	: 1.50 ms	Stn Units	: Metric
# Channels	: 42	Coil Area	: 4100 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 100m X 100m	Receiver	: Digital #109
Current	: 20 Amps	Operator	: M Humam

Loop Coordinates (X,Y,Z)
1. 627450m, 7.9191e+06m, 0m
2. 627450m, 7.919e+06m, 0m
3. 627550m, 7.919e+06m, 0m
4. 627550m, 7.9191e+06m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)
1. 627500m, 7.91905e+06m, 0m
2. 90deg, 0.1deg, 1900m

Channel Times (usec)

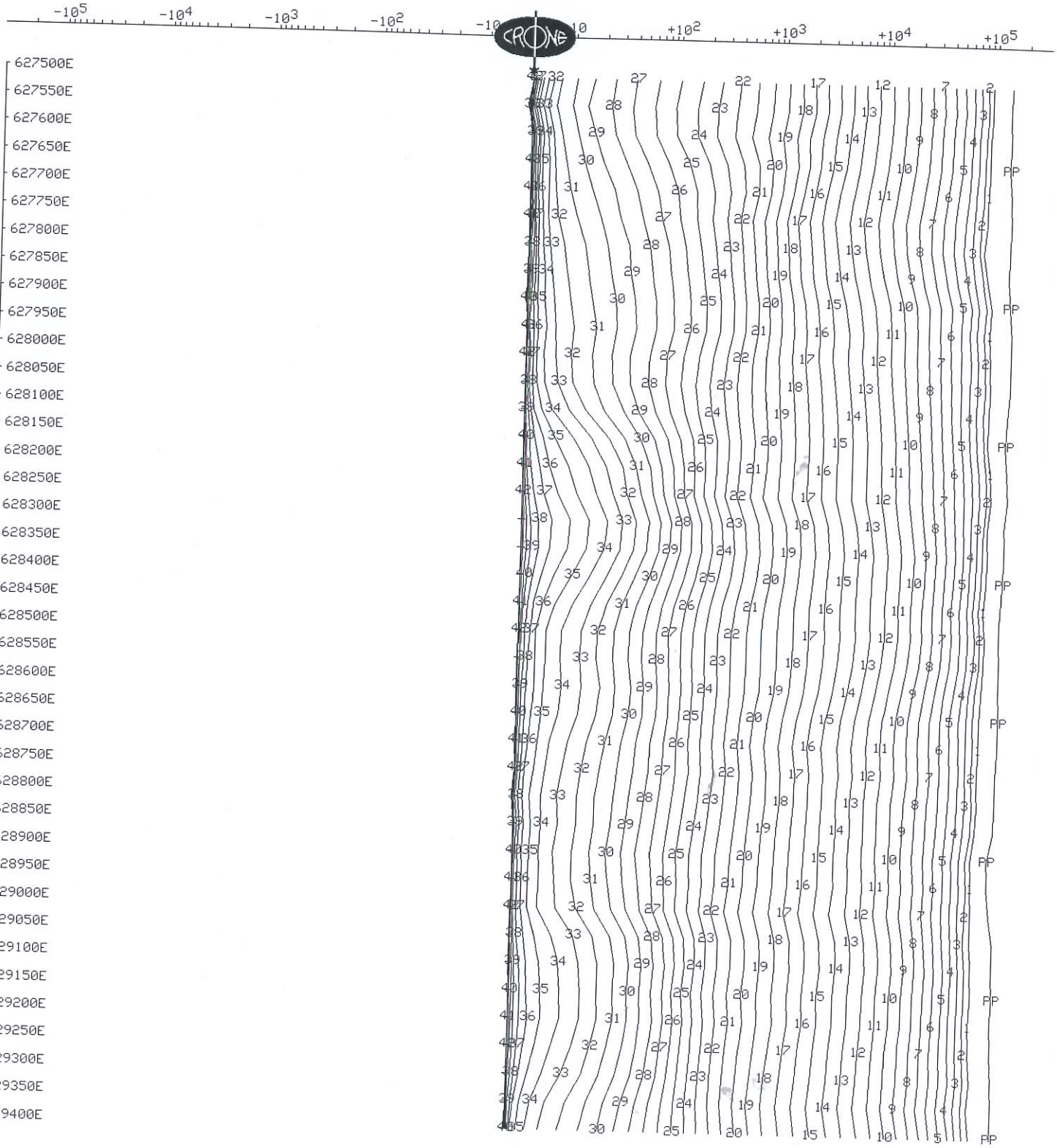
Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	58	54	2	58	72	65
3	72	86	79	4	86	104	94	5	104	126	115
6	126	153	140	7	153	185	169	8	185	225	205
9	225	270	248	10	270	328	299	11	328	396	362
12	396	482	439	13	482	580	531	14	580	702	641
15	702	850	776	16	850	1026	938	17	1026	1242	1134
18	1242	1498	1370	19	1498	1813	1656	20	1813	2187	2000
21	2187	2646	2416	22	2646	3195	2920	23	3195	3861	3528
24	3861	4666	4264	25	4666	5634	5150	26	5634	6808	6221
27	6808	8221	7514	28	8221	9936	9078	29	9936	12000	10968
30	12000	14490	13245	31	14490	17510	16000	32	17510	21150	19330
33	21150	25550	23350	34	25550	30870	28210	35	30870	37290	34080
36	37290	45040	41165	37	45040	54410	49725	38	54410	65730	60070
39	65730	79390	72560	40	79390	95910	87650	41	95910	115800	105855
42	115800	139900	127850								

OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **7919050N**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 7, 2006	File name	: L02.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 42 of 42 channels and PP

Scale: 1:10000



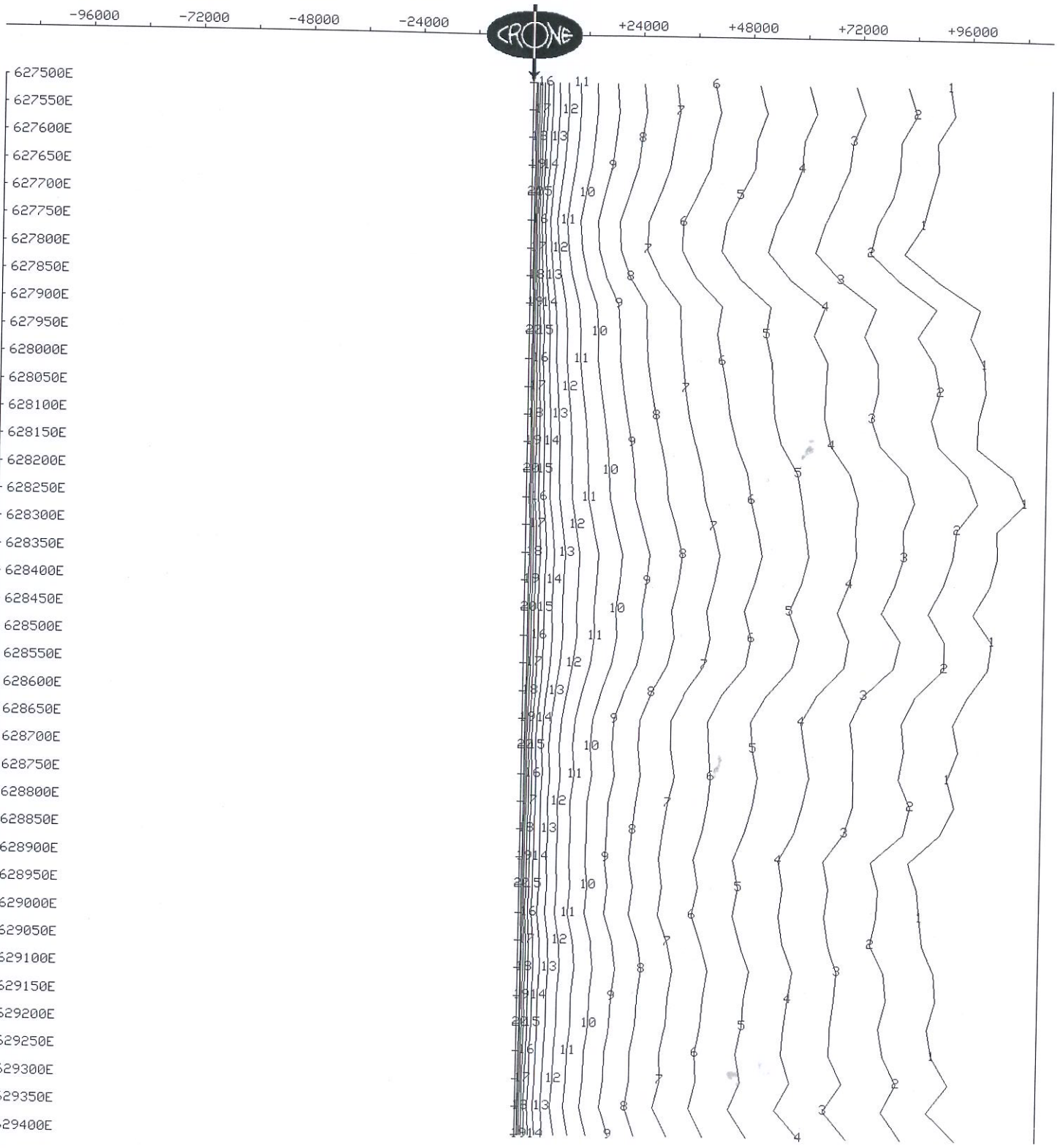
OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: Metallica Minerals Ltd	Line	: 7919050N
Grid	: Prospect	Tx Loop	: Moving
Date	: Aug 7, 2006	File name	: L02.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 42 channels and PP

Scale: 1:10000

Unit Scale: 1cm = 12000 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

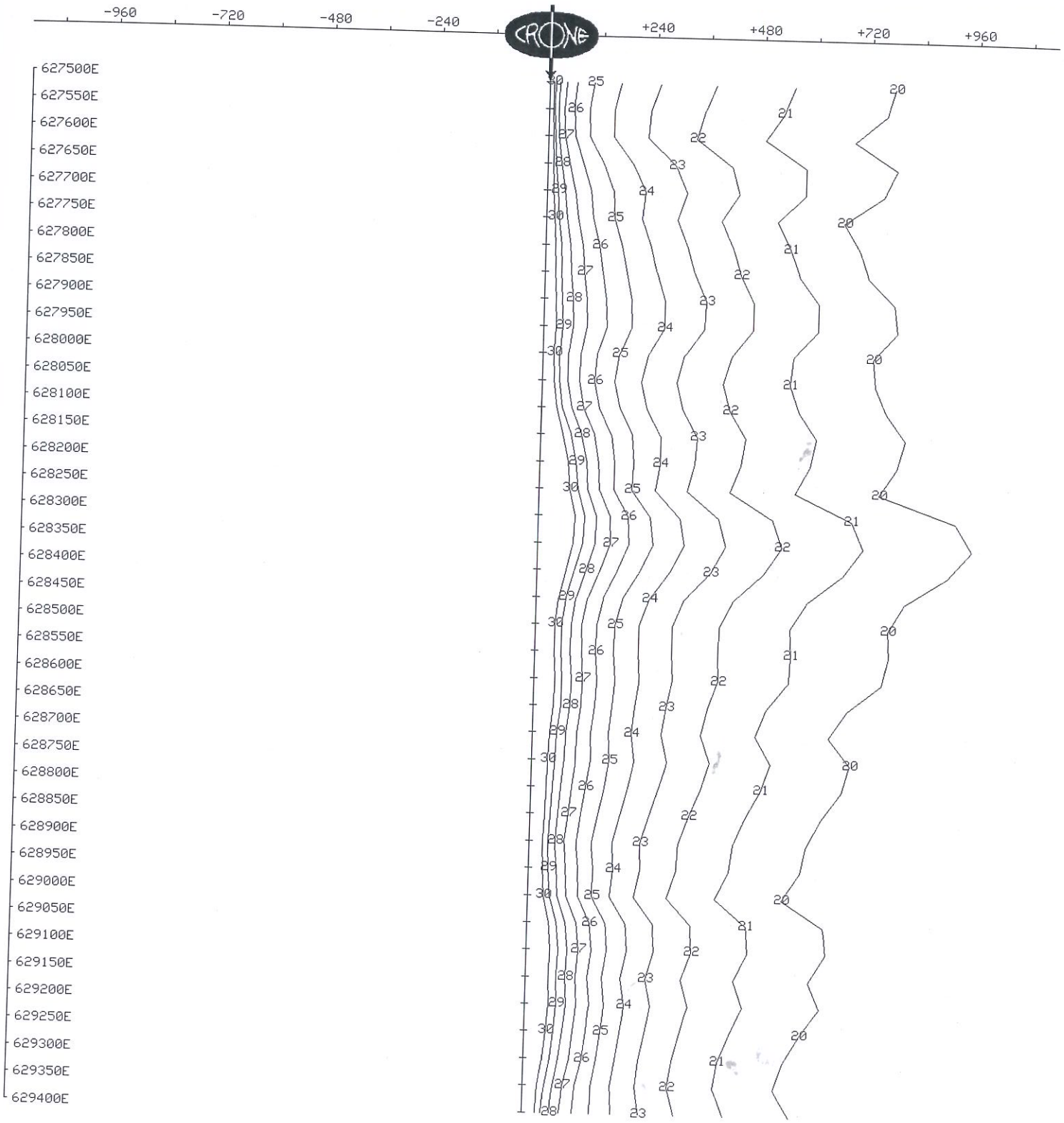
Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 7, 2006

Line : **7919050N**
Tx Loop : **Moving**
File name : L02.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 11 of 42 channels

Scale: 1:10000

Unit Scale: 1cm = 120 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

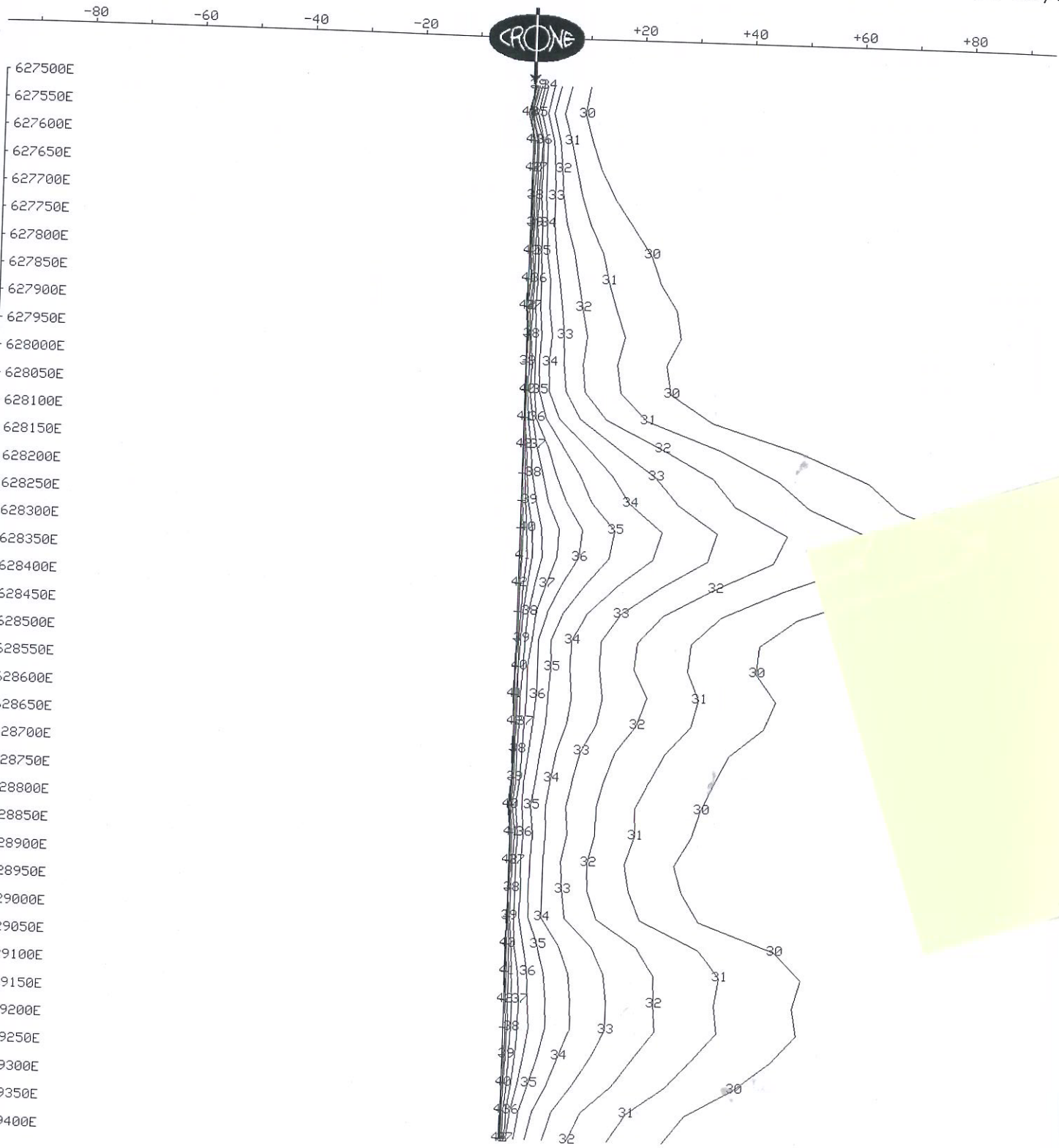
Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 7, 2006

Line : **7919050N**
Tx Loop : **Moving**
File name : L02.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 13 of 42 channels

Scale: 1:10000

Unit Scale: 1cm = 10 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 9, 2008
Time Base : 150.00 ms
Ramp Time : 1.50 ms
Channels: 42
Sync Type : Cable
Loop Size : 100m X 100m
Current : 20 Amps

Line : **7906650N**
Tx Loop : **Moving**
File name : L03.PEM
Readings: 27
Stn Units : Metric
Coil Area : 4100 sq m
Polarity : +
Receiver : Digital #109
Operator : M Humam

Loop Coordinates (X,Y,Z)
1. 632650m, 7.9067e+06m, 0m
2. 632650m, 7.9066e+06m, 0m
3. 632750m, 7.9066e+06m, 0m
4. 632750m, 7.9067e+06m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)
1. 632700m, 7.90665e+06m, 0m
2. 90deg, 0.1deg, 1300m

Channel Times (usec)

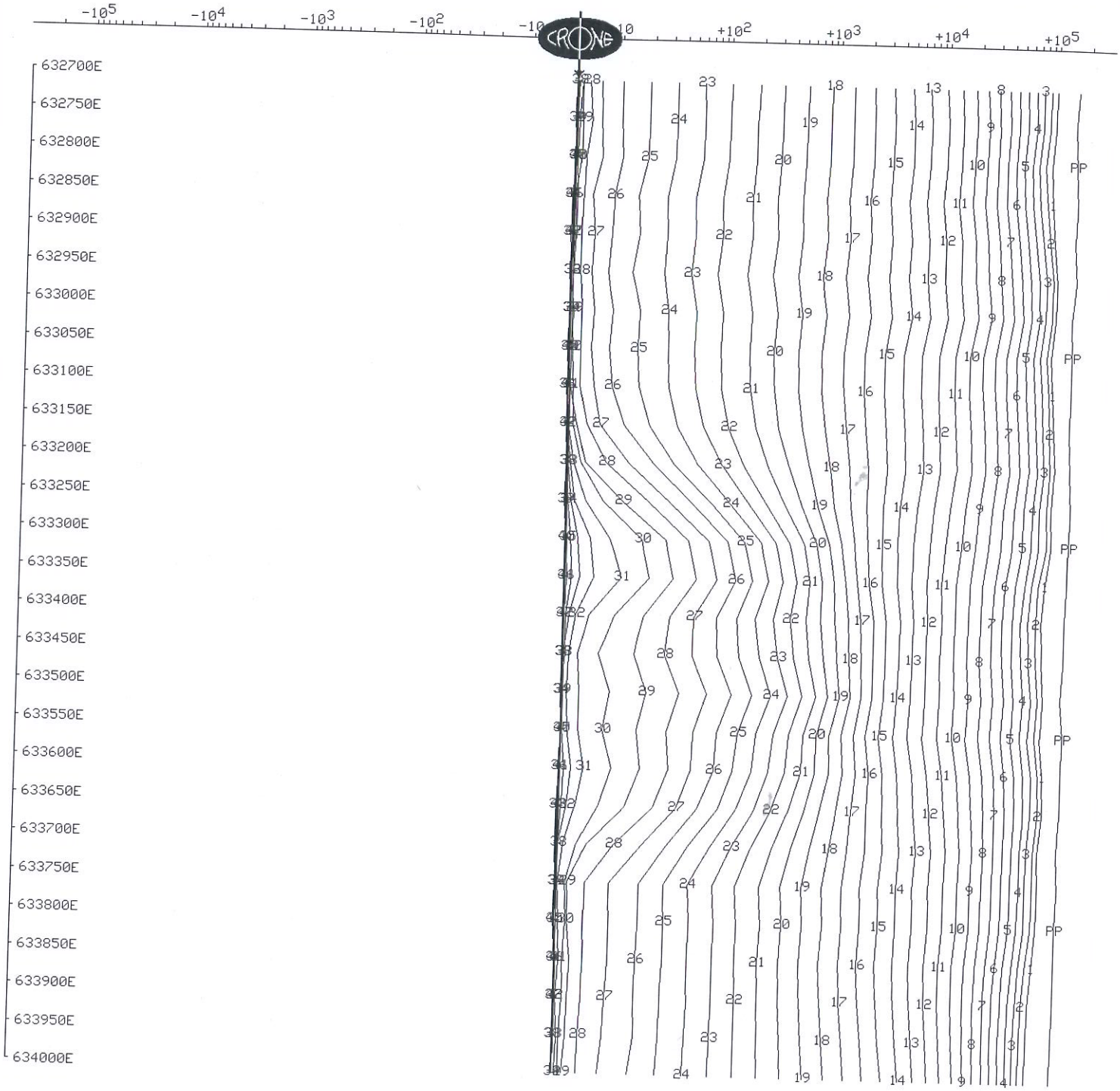
Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	58	54	2	58	72	65
3	72	86	79	4	86	104	94	5	104	126	115
6	126	153	140	7	153	185	169	8	185	225	205
9	225	270	248	10	270	328	299	11	328	396	362
12	396	482	439	13	482	580	531	14	580	702	641
15	702	850	776	16	850	1026	938	17	1026	1242	1134
18	1242	1498	1370	19	1498	1813	1656	20	1813	2187	2000
21	2187	2646	2416	22	2646	3195	2920	23	3195	3861	3528
24	3861	4666	4264	25	4666	5634	5150	26	5634	6808	6221
27	6808	8221	7514	28	8221	9936	9078	29	9936	12000	10968
30	12000	14490	13245	31	14490	17510	16000	32	17510	21150	19330
33	21150	25550	23350	34	25550	30870	28210	35	30870	37290	34080
36	37290	45040	41165	37	45040	54410	49725	38	54410	65730	60070
39	65730	79390	72560	40	79390	95910	87650	41	95910	115800	105855
42	115800	139900	127850								

OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: Metallica Minerals Ltd	Line	: 7906650N
Grid	: Prospect	Tx Loop	: Moving
Date	: Aug 9, 2008	File name	: L03.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 42 of 42 channels and PP

Scale: 1:7500

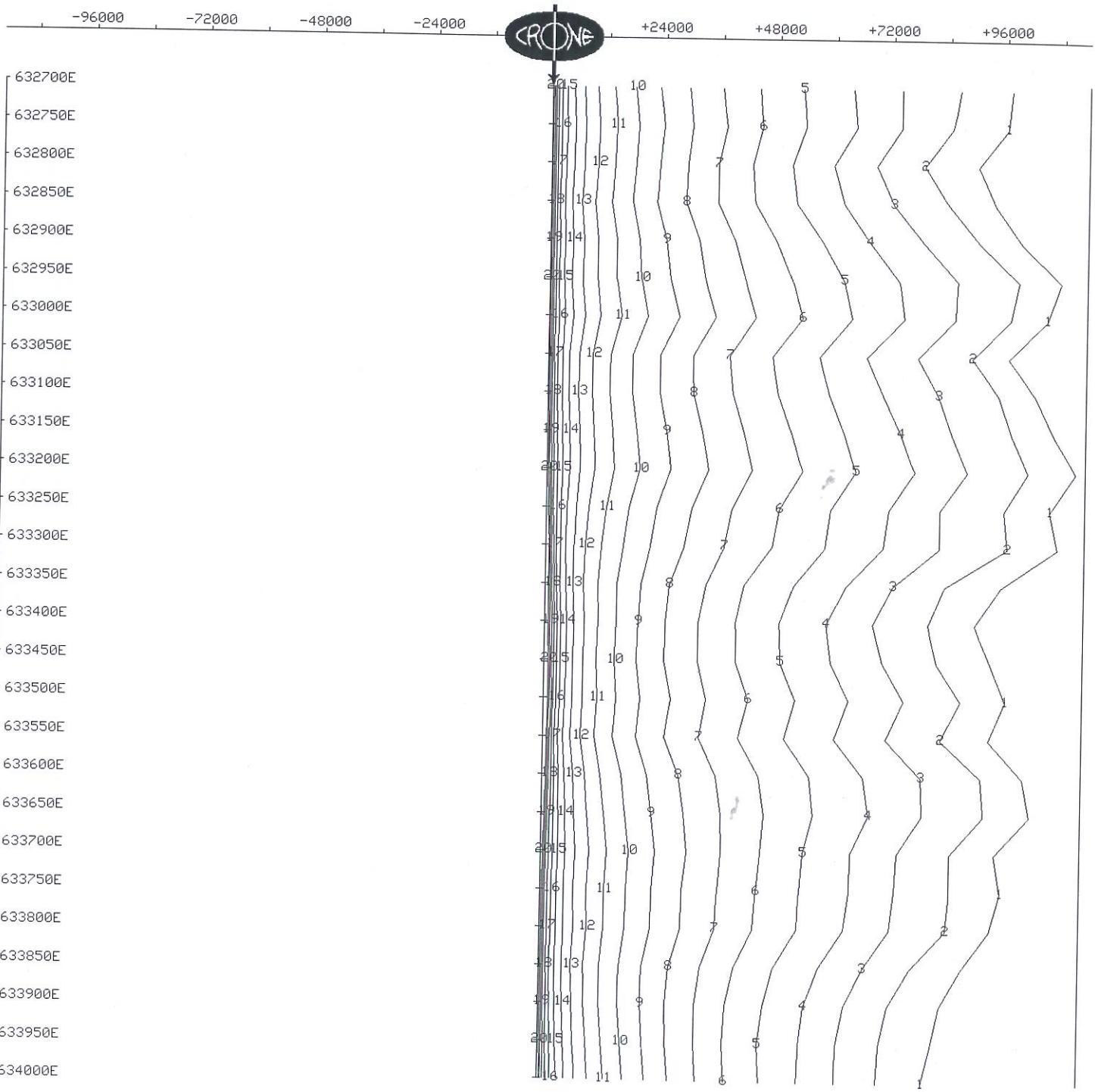


OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 9, 2008

Line : 7906650N
Tx Loop : Moving
File name : L03.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 42 channels and PP
Scale: 1:7500
Unit Scale: 1cm = 12000 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

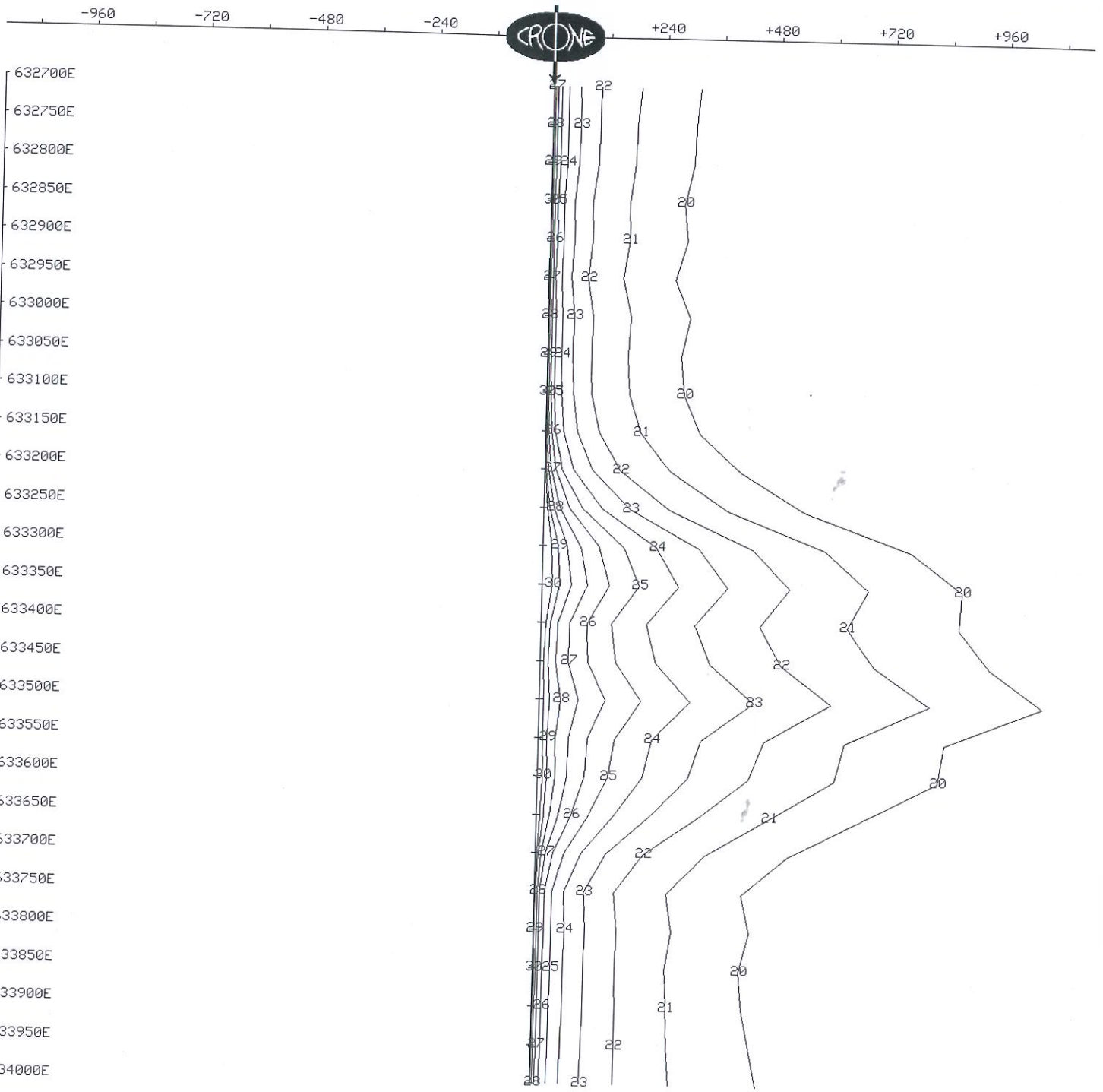
Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 9, 2008

Line : 7906650N
Tx Loop : Moving
File name : L03.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 11 of 42 channels

Scale: 1:7500

Unit Scale: 1cm = 120 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

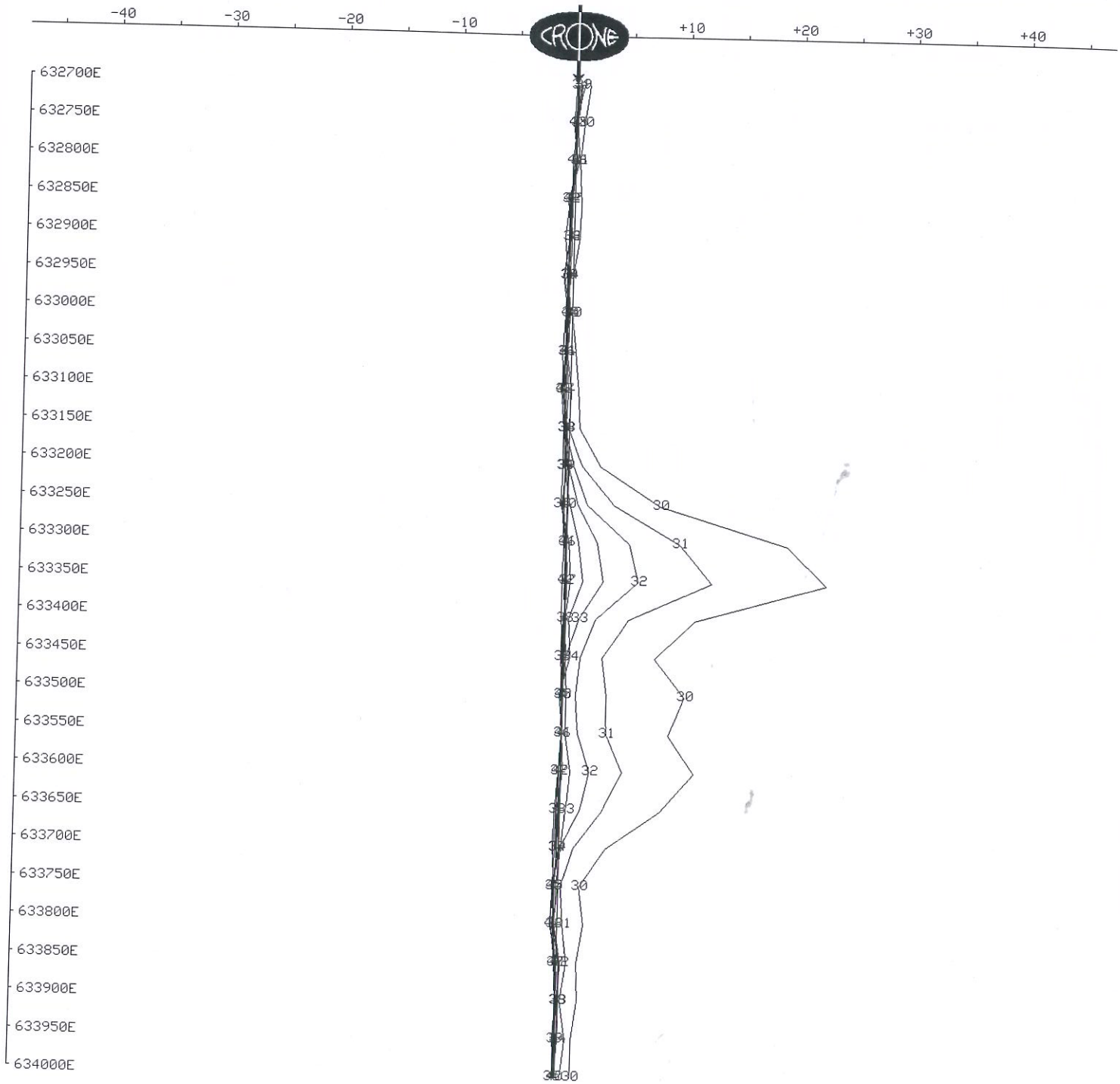
Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 9, 2008

Line : **7906650N**
Tx Loop : **Moving**
File name : L03.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 13 of 42 channels

Scale: 1:7500

Unit Scale: 1cm = 5 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 11, 2006
Time Base : 150.00 ms
Ramp Time : 1.50 ms
Channels: 42
Sync Type : Cable
Loop Size : 100m X 100m
Current : 20 Amps

Line : **7910250N**
Tx Loop : **Moving**
File name : L04.PEM
Readings: 27
Stn Units : Metric
Coil Area : 4100 sq m
Polarity : +
Receiver : Digital #109
Operator : M Humam

Loop Coordinates (X,Y,Z)
1. 630450m, 7.9103e+06m, 0m
2. 630450m, 7.9102e+06m, 0m
3. 630550m, 7.9102e+06m, 0m
4. 630550m, 7.9103e+06m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)
1. 630500m, 7.91025e+06m, 0m
2. 90deg, 0.1deg, 1300m

Channel Times (usec)

Ch	Start	End	Center
PP	-198	-99	-149
3	72	86	79
6	126	153	140
9	225	270	248
12	396	482	439
15	702	850	776
18	1242	1498	1370
21	2187	2646	2416
24	3861	4666	4264
27	6808	8221	7514
30	12000	14490	13245
33	21150	25550	23350
36	37290	45040	41165
39	65730	79390	72560
42	115800	139900	127850

Ch	Start	End	Center
1	50	58	54
4	86	104	94
7	153	185	169
10	270	328	299
13	482	580	531
16	850	1026	938
19	1498	1813	1656
22	2646	3195	2920
25	4666	5634	5150
28	8221	9936	9078
31	14490	17510	16000
34	25550	30870	28210
37	45040	54410	49725
40	79390	95910	87650

Ch	Start	End	Center
2	58	72	65
5	104	126	115
8	185	225	205
11	328	396	362
14	580	702	641
17	1026	1242	1134
20	1813	2187	2000
23	3195	3861	3528
26	5634	6808	6221
29	9936	12000	10968
32	17510	21150	19330
35	30870	37290	34080
38	54410	65730	60070
41	95910	115800	105855

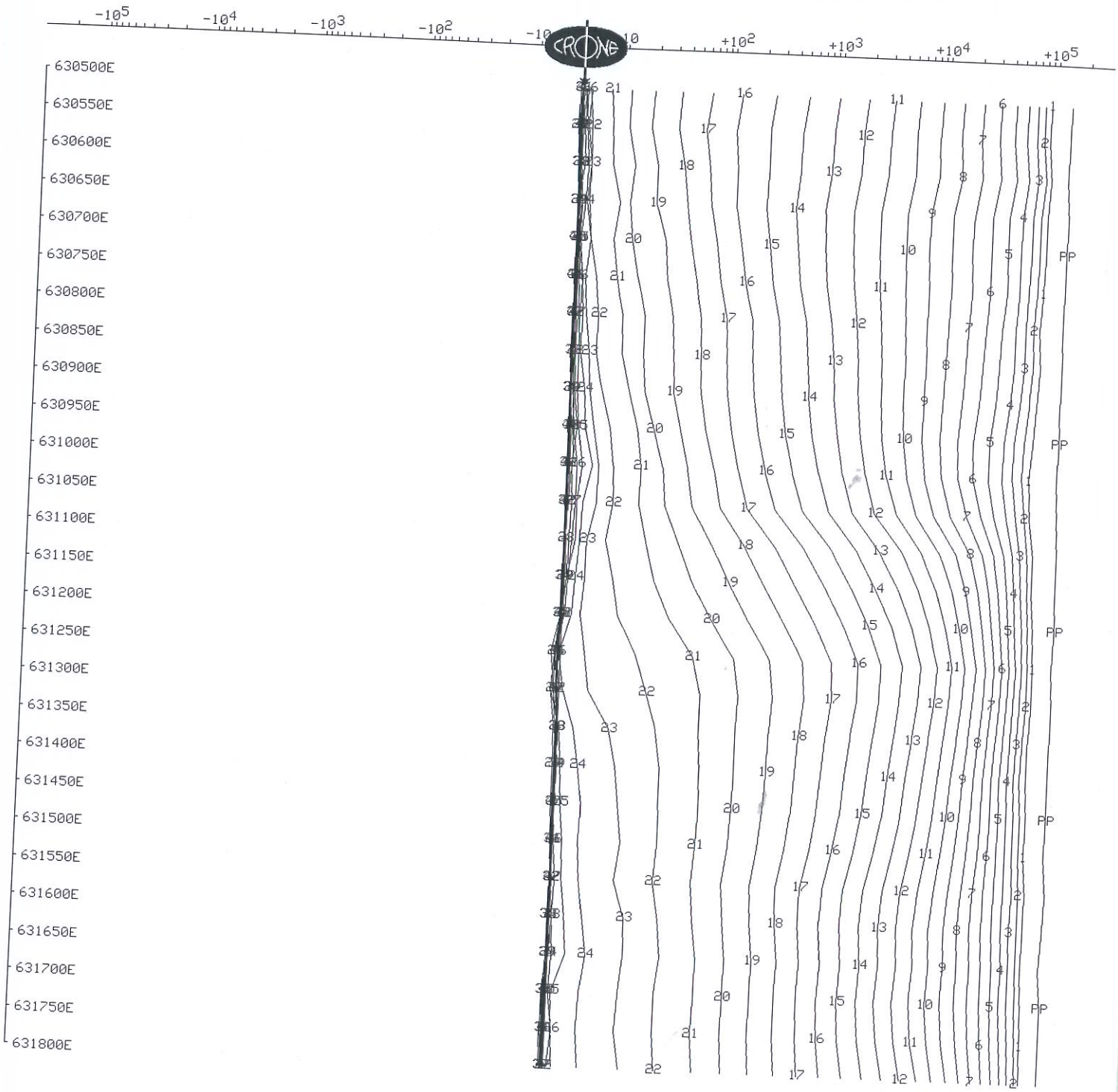
OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 11, 2006

Line : 7910250N
Tx Loop : Moving
File name : L04.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 42 of 42 channels and PP

Scale: 1:7500



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

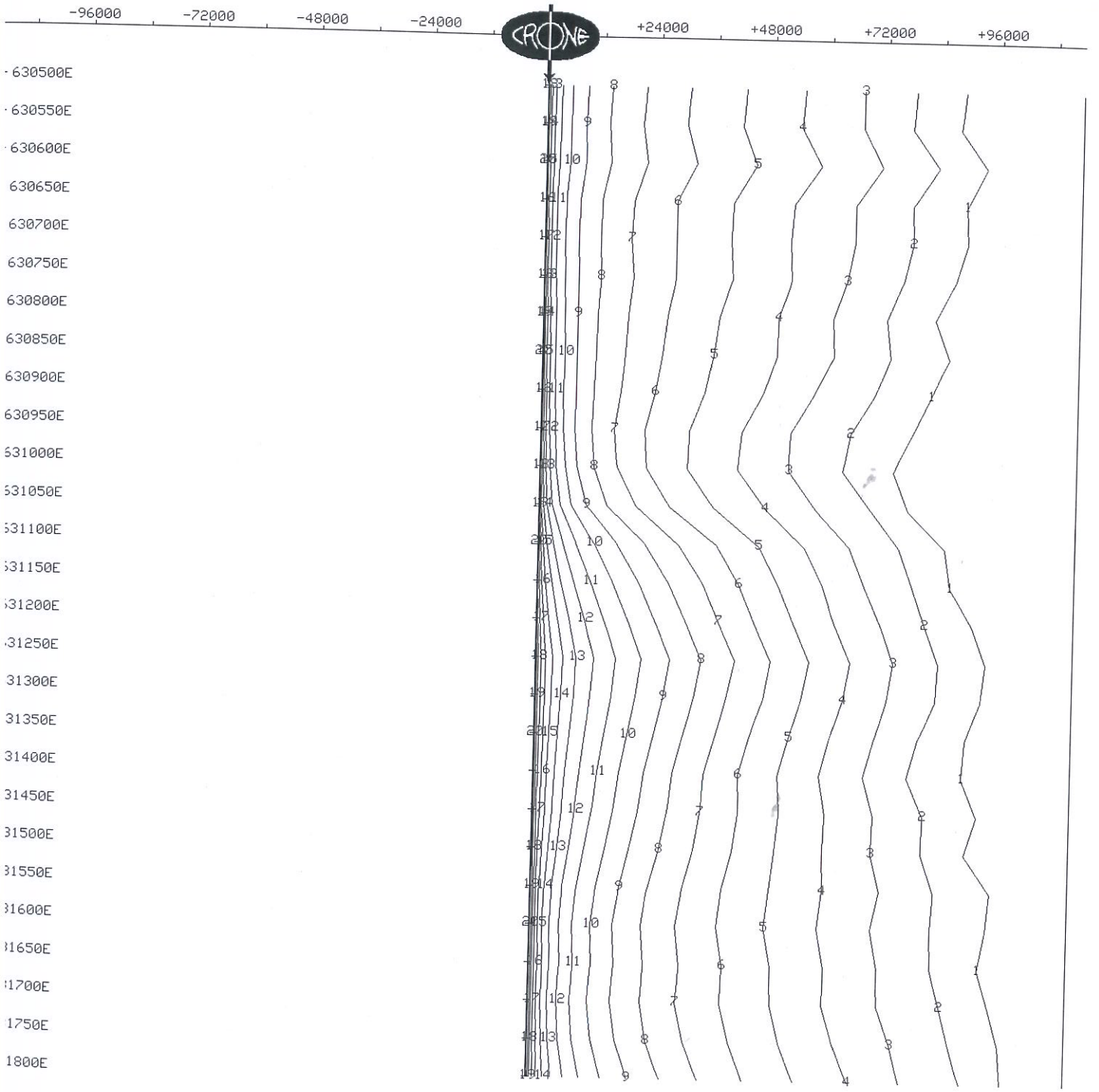
Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 11, 2006

Line : **7910250N**
Tx Loop : **Moving**
File name : L04.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 42 channels and PP

Scale: 1:7500

Unit Scale: 1cm = 12000 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

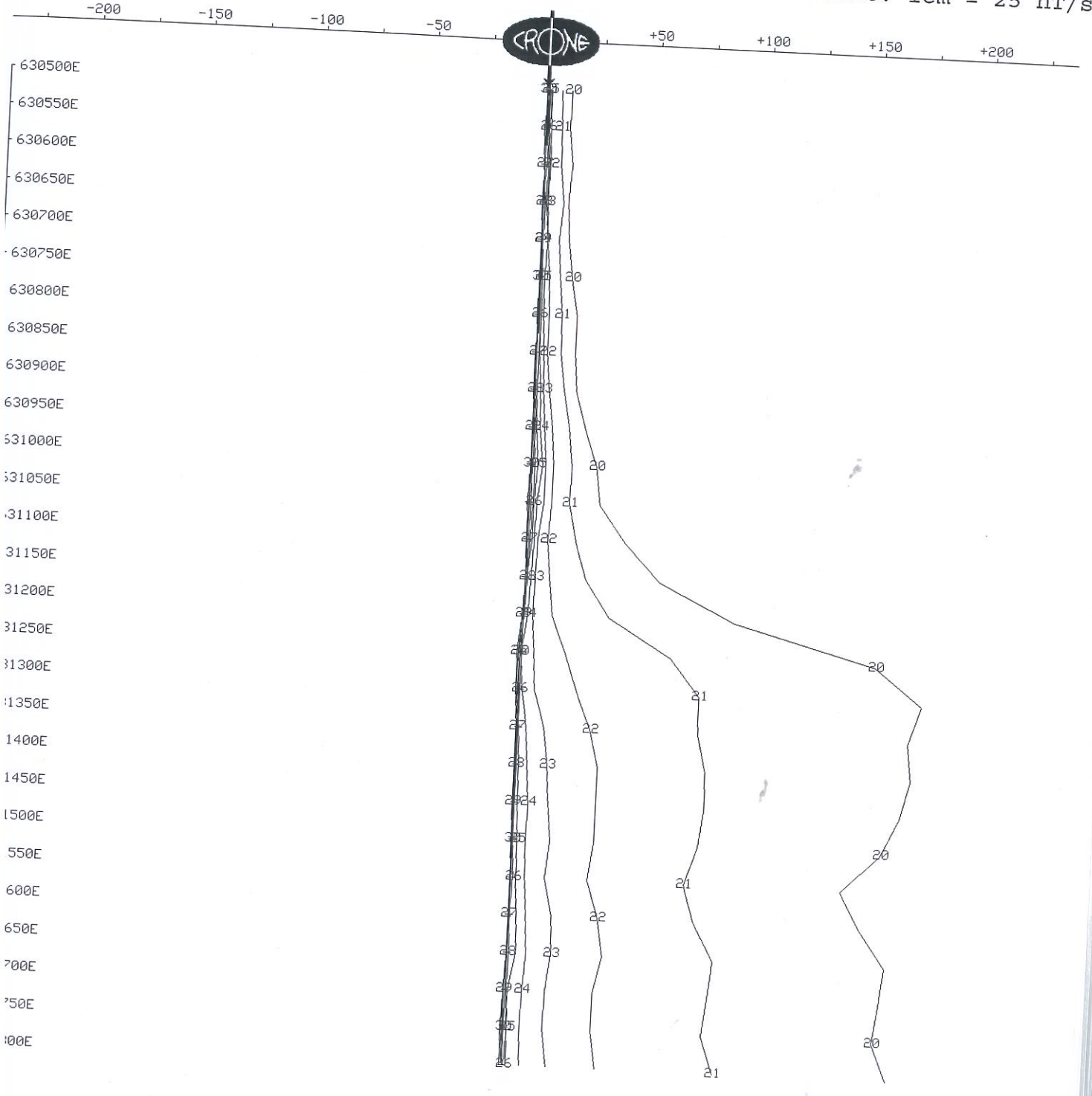
Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 11, 2006

Line : 7910250N
Tx Loop : Moving
File name : L04.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 11 of 42 channels

Scale: 1:7500

Unit Scale: 1cm = 25 nT/s



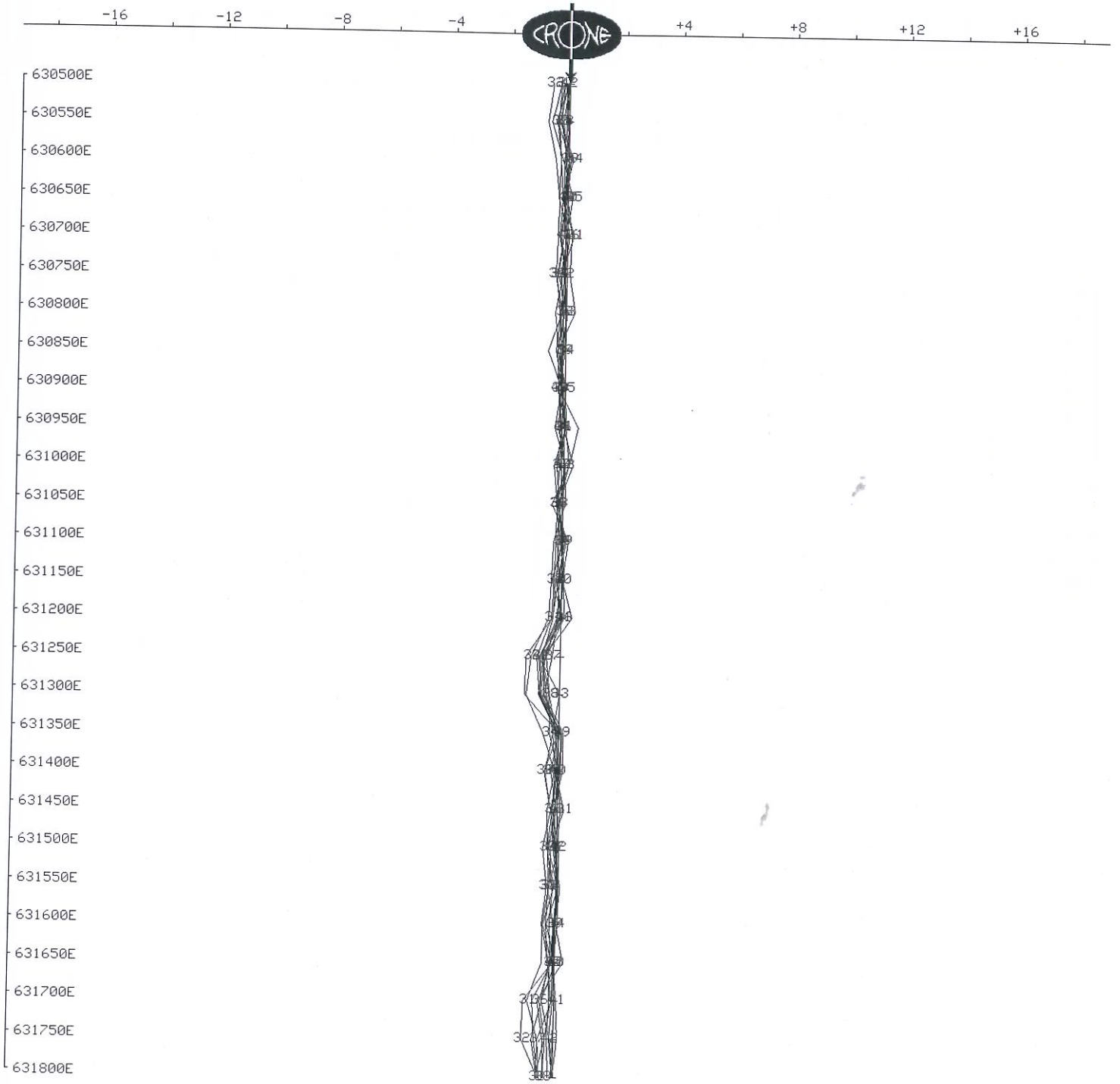
OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **7910250N**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 11, 2006	File name	: L04.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 13 of 42 channels

Scale: 1:7500

Unit Scale: 1cm = 2 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **633350E**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 12, 2006	File name	: L05.PEM
Time Base	: 150.00 ms	# Readings	: 25
Ramp Time	: 1.50 ms	Stn Units	: Metric
# Channels	: 42	Coil Area	: 4100 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 100m X 100m	Receiver	: Digital #109
Current	: 20 Amps	Operator	: M Humam

Loop Coordinates (X,Y,Z)

1. 633300m, 7.90605e+06m, 0m
2. 633300m, 7.90595e+06m, 0m
3. 633400m, 7.90595e+06m, 0m
4. 633400m, 7.90605e+06m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 633350m, 7.906e+06m, 0m
2. 360deg, 0.1deg, 1200m

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	58	54	2	58	72	65
3	72	86	79	4	86	104	94	5	104	126	115
6	126	153	140	7	153	185	169	8	185	225	205
9	225	270	248	10	270	328	299	11	328	396	362
12	396	482	439	13	482	580	531	14	580	702	641
15	702	850	776	16	850	1026	938	17	1026	1242	1134
18	1242	1498	1370	19	1498	1813	1656	20	1813	2187	2000
21	2187	2646	2416	22	2646	3195	2920	23	3195	3861	3528
24	3861	4666	4264	25	4666	5634	5150	26	5634	6808	6221
27	6808	8221	7514	28	8221	9936	9078	29	9936	12000	10968
30	12000	14490	13245	31	14490	17510	16000	32	17510	21150	19330
33	21150	25550	23350	34	25550	30870	28210	35	30870	37290	34080
36	37290	45040	41165	37	45040	54410	49725	38	54410	65730	60070
39	65730	79390	72560	40	79390	95910	87650	41	95910	115800	105855
42	115800	139900	127850								

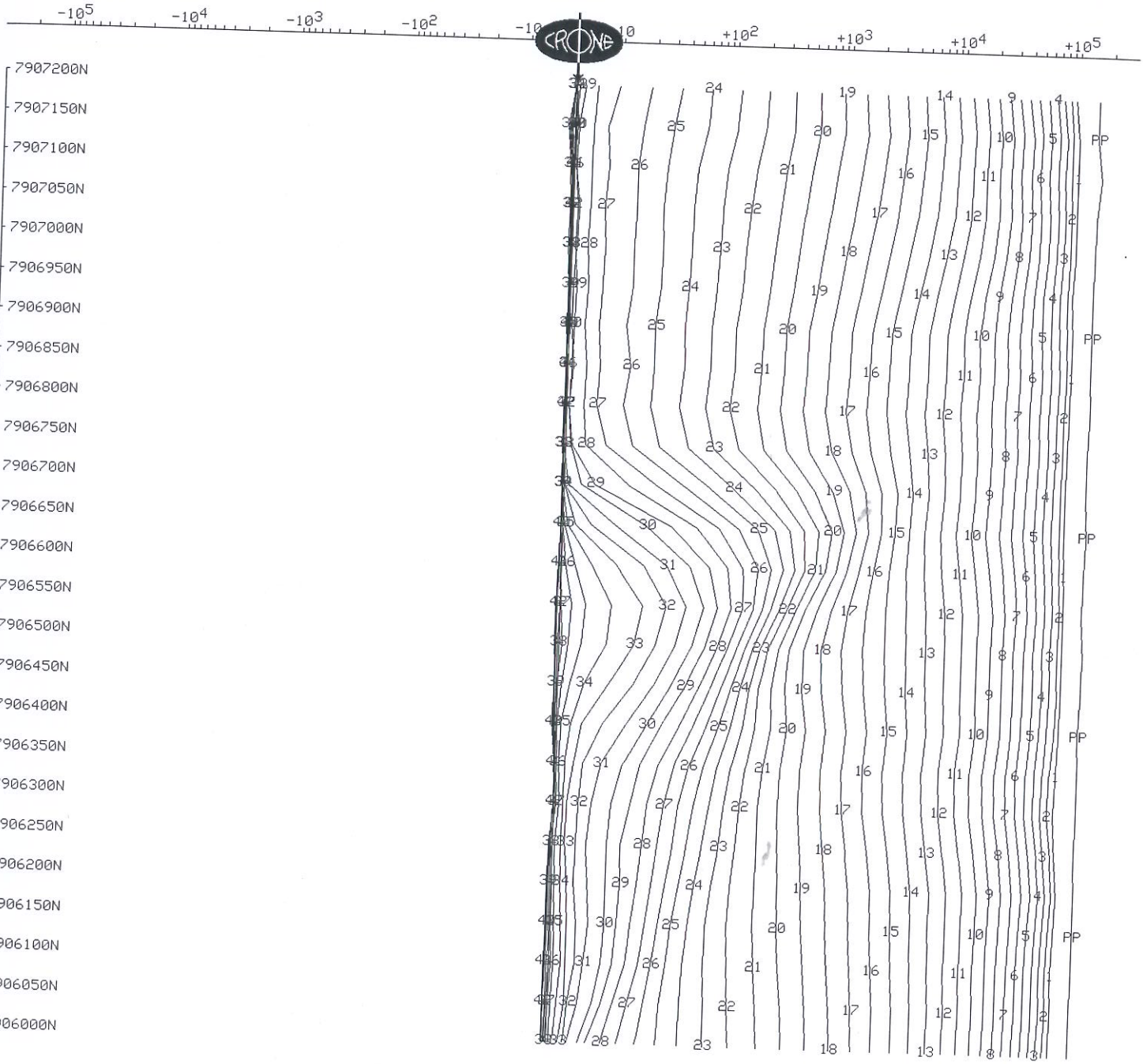
OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 12, 2006

Line : 633350E
Tx Loop : Moving
File name : L05.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 42 of 42 channels and PP

Scale: 1:7500

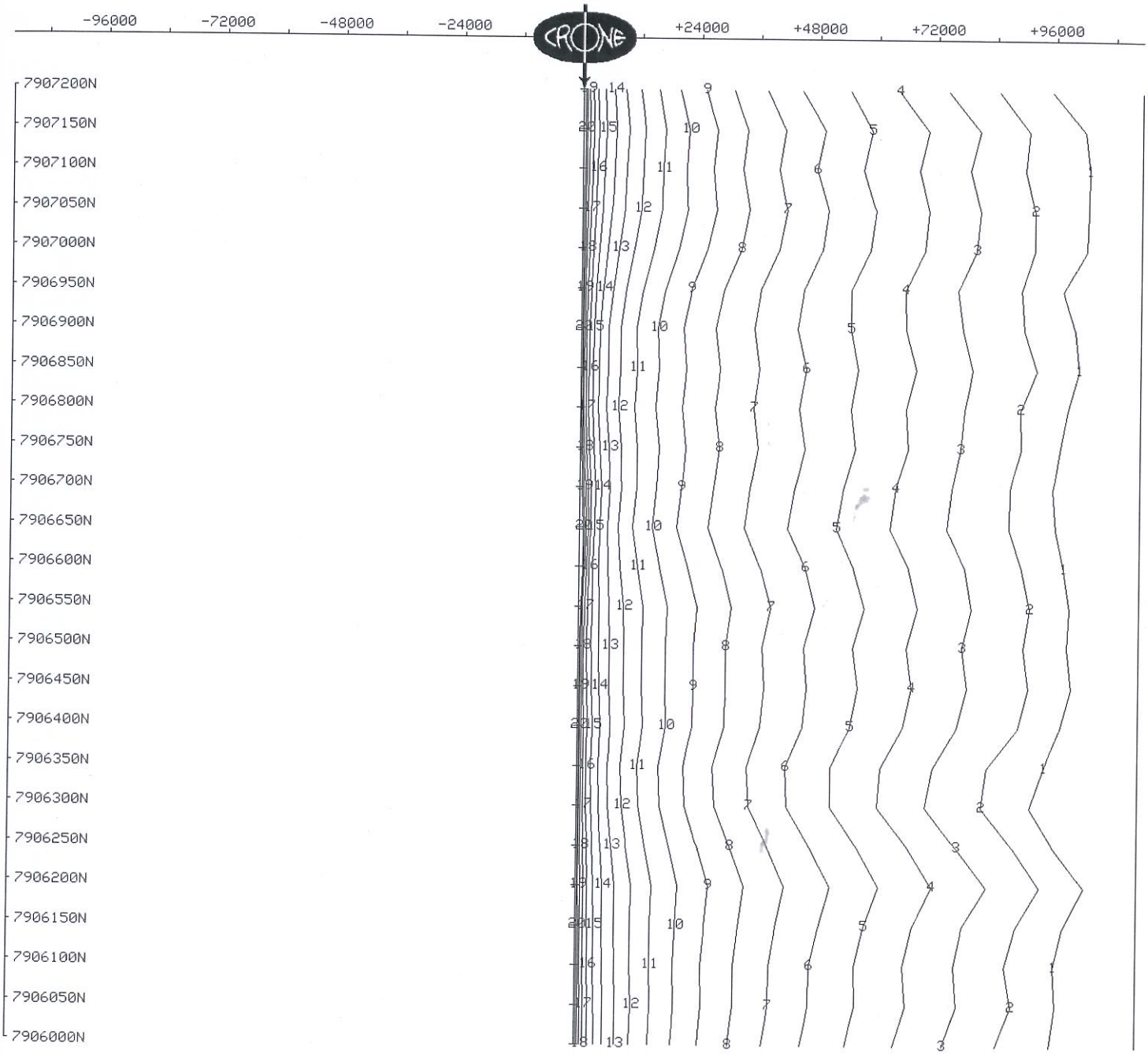


OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client	: **Metallica Minerals Ltd**	Line	: **633350E**
Grid	: **Prospect**	Tx Loop	: **Moving**
Date	: Aug 12, 2006	File name	: L05.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 42 channels and PP

Scale: 1:7500 Unit Scale: 1cm = 12000 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

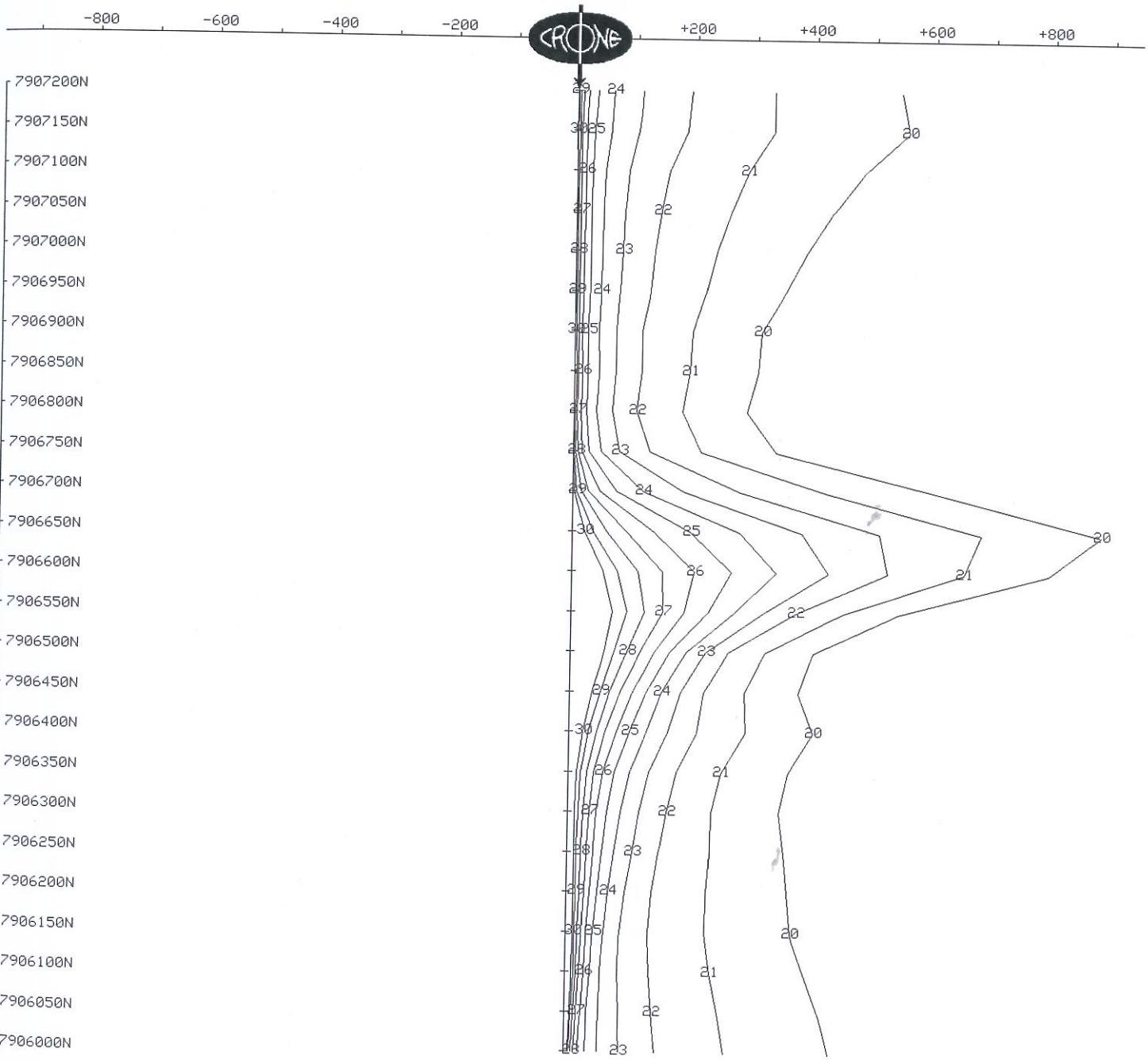
Client : Metallica Minerals Ltd
Grid : Prospect
Date : Aug 12, 2006

Line : 633350E
Tx Loop : Moving
File name : L05.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 11 of 42 channels

Scale: 1:7500

Unit Scale: 1cm = 100 nT/s



OUTER-RIM EXPLORATION SERVICES
Surface Pulse EM Survey

Client : **Metallica Minerals Ltd**
Grid : **Prospect**
Date : Aug 12, 2006

Line : **633350E**
Tx Loop : **Moving**
File name : L05.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 13 of 42 channels

Scale: 1:7500

Unit Scale: 1cm = 10 nT/s