GEOPHYSICAL/GEOCHEMICAL REPORT
ON A
UTEM SURVEY
AND AN
MMI SOIL GEOCHEMISTRY SURVEY
OVER THE
NORTHERN PART
OF THE
COBALT AREA PROPERTY
GILLIES LIMIT NORTH TOWNSHIP
LARDER LAKE MINING DIVISION, ONTARIO

LOCATED:	To the immediate south of the town of Cobalt, Ontario 47° 21'North Latitude, 79°42' West Longitude NTS: 31M/5
WRITTEN FOR:	**INTERNATIONAL MILLENIUM MINING CORP** 3rd Floor – 120 Lonsdale Avenue North Vancouver, B.C. V7M 2E8
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SUMMARY

UTEM surveying, MMI (mobile metal ion) soil sampling along with grid emplacement was carried out during the period of February 22nd to May 27th, 2007 within two grid areas at the northern end of the Gillies Limit Claim Group, which is to the immediate south of the village of Cobalt.

The general purpose of exploration on this property is to (1) locate Cobalt-type silver-cobalt veins as has been historically mined, and (2) locate sulphide mineralization, which to date, had not been mined in the area, but do occur.

The MMI survey consisted of 551 samples. These were bagged and sent to SGS Laboratories in Toronto, Ontario for analysis where they were tested for 38 elements. The results for five of these, namely, silver, copper, cobalt, gold, and nickel, were divided by their respected mean background values to obtain a value called a response ratio. Stacked histograms were then made for each survey line and contour plans were also made for silver, cobalt, and copper.

CONCLUSIONS

1. The MMI soil survey revealed 12 very strong anomalous responses and 12 anomalous responses that are not as strong, both types of responses that are indicative of Cobalt area-type arsenide silver-cobalt mineralization.

2. The MMI soil survey also revealed two anomalies that are indicative of sulphide-type mineralization.

3. The UTEM survey revealed a weak conductor within the center of the grid two area. There was very little UTEM response within the grid one area.

RECOMMENDATIONS

1. Detail MMI sampling should be carried out around each of the anomalies, that is, sampling every 6.25 meters on lines 50 meters apart. This will help delineate the drill targets more accurately.

2. Induced polarization and resistivity surveying should be carried out across MMI anomalies that appear to be reflecting sulphide deposits. Geophysical surveying such as this will help determine depths as well as help define drill targets.

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INTRODUCTION AND GENERAL REMARKS

This report discusses survey procedure, compilation of data, interpretation methods, and the results of a UTEM survey as well as a mobile metal ion (MMI) survey carried out over the northern part of the Cobalt Property belonging to International Millennium Mining Corp. The property is located to the immediate south of Cobalt, Ontario.

The line cutting, grid preparation and MMI soil sampling was carried out by a Geotronics crew of up to 6 men, under supervision of the writer, during the period February 22nd to May 27th, 2007. The UTEM survey was carried out by Lamontagne Geophysics Ltd. within the same time period.

The general purpose of exploration on this property is to (1) locate Cobalt-type silver-cobalt veins as has been historically mined, and (2) locate sulphide mineralization, which to date, had not been mined in the area, but do occur.

Much of the following description of the property up to and including the property's geology, was taken from James Burns 43-101 report on the property dated April 13th, 2006.

PROPERTY AND OWNERSHIP

The Cobalt Area Project lies in northeastern Ontario **(Figure 1)**. It consists of 18 patented, 10 leased and 118 staked mining claims, equivalent to 706 claim units for a total of 11,296 hectares. They were acquired under two primary option agreements from two local parties as described by Douville (2001), and by staking. Since the 2001 report, one of these option agreements (S. Wareing & M. Simpson) was exercised in full.

Claim #	Recording Date	Due Date	Claim Units	Work Required	Township	Ownership
1140510	Mar 02/2004	2-Mar-2007	5	307	Gillies Limit (N)	*Cabo Mining*
3007687	Mar 12/2004	12-Mar-2007	16	6,400	Lorrain	*Outcrop*
3007688	Mar 12/2004	12-Mar-2007	15	6,000	Lorrain	*Outcrop*
3007685	Mar 17/2004	17-Mar-2007	8	1,810	Lorrain	*Cabo Mining*
3007686	Mar 17/2004	17-Mar-2007	16	6,400	Lorrain	*Cabo Mining*
1219335	Aug 06/1996	22-Mar-2007	14	1,952	Gillies Limit (N)	*Cons Professor*
1219336	Aug 06/1996	22-Mar-2007	14	5,600	Gillies Limit (N)	*Cons Professor*
1219337	Aug 06/1996	22-Jun-2007	5	2,000	Gillies Limit (N)	*Cons Professor*
1219338	Aug 06/1996	22-Jun-2007	8	3,200	Gillies Limit (N)	*Cons Professor*
1219339	Aug 06/1996	22-Jun-2007	1	400	Gillies Limit (N)	*Cons Professor*
3005867	Dec 08/2003	22-Jun-2007	2	800	Gillies Limit (N)	*Outcrop*
1174340	Dec 13/00	22-Mar-2007	1	400	Gillies Limit (N)	*Outcrop*
3005866	Dec 22/2003	22-Jun-2007	1	400	Coleman	*Cabo Mining*
1242199	Mar 30/2001	5-Jul-2007	2	800	Gillies Limit (N)	*Outcrop*
1242200	Mar 30/2001	5-Jul-2007	9	91	Gillies Limit (N)	*Outcrop*
1140509	Apr 02/2002	5-Jul-2007	16	6,400	Gillies Limit (N)	*Cabo Mining*
3000789	Apr 02/2002	5-Jul-2007	4	1,600	Lorrain	*Cabo Mining*
3000790	Apr 02/2002	5-Jul-2007	12	4,800	Lorrain	*Cabo Mining*
3000792	Apr 02/2002	5-Jul-2007	8	3,200	Lorrain	*Cabo Mining*
3000793	Apr 02/2002	5-Jul-2007	8	3,200	Lorrain	*Cabo Mining*
1098667	Apr 02/2002	5-Jul-2007	8	3,200	Gillies Limit (N)	*Cabo Mining*
1098668	Apr 02/2002	5-Jul-2007	9	3,600	Gillies Limit (N)	*Cabo Mining*
1098670	Apr 02/2002	5-Jul-2007	4	1,600	Gillies Limit (N)	*Cabo Mining*
1114396	Apr 02/2002	5-Jul-2007	5	2,000	Gillies Limit (N)	*Cabo Mining*
1114397	Apr 02/2002	5-Jul-2007	9	3,600	Gillies Limit (N)	*Cabo Mining*
1221535	Apr 05/2001	5-Jul-2007	16	6,400	Gillies Limit (N)	*Cabo Mining*
1221536	Apr 05/2001	5-Jul-2007	6	2,400	Gillies Limit (N)	*Cabo Mining*
1249666	Apr 05/2001	5-Jul-2007	14	5,600	Gillies Limit (N)	*Outcrop*
1249667	Apr 05/2001	5-Jul-2007	16	6,400	Gillies Limit (N)	*Outcrop*
1249668	Apr 05/2001	5-Jul-2007	16	6,400	Gillies Limit (N)	*Outcrop*
1249669	Apr 05/2001	5-Jul-2007	12	4,800	Gillies Limit (N)	*Outcrop*
1249670	Apr 05/2001	5-Jul-2007	16	6,400	Gillies Limit (N)	*Outcrop*
3006006	Apr 30/2004	13-Aug-2007	12	1,442	Gillies Limit (N)	*Outcrop*
1221540	May 11/2001	13-Aug-2007	14	5,600	Gillies Limit (N)	*Outcrop*
3009737	May 13/2003	13-Aug-2007	4	1,600	Lorrain	*Cabo Mining*
1167221	Jun 07/2002	7-Jun-2007	1	400	Gillies Limit (N)	*Outcrop*
1167223	Jun 07/2001	7-Jun-2007	1	400	Lorrain	*Outcrop*
1114399	Jun 17/2002	17-Jun-2007	5	2,000	Gillies Limit (N)	*Cabo Mining*
3002206	Jun 17/2002	17-Jun-2007	2	800	Lorrain	*Cabo Mining*
3002207	Jun 17/2002	17-Jun-2007	2	800	Lorrain	*Cabo Mining*
3002208	Jun 17/2002	17-Jun-2007	13	5,200	Lorrain	*Cabo Mining*

3002209	Jun 17/2002	17-Jun-2007	8	3,200	Lorrain	*Cabo Mining*
3005864	Jun 17/2004	17-Jun-2007	16	6,400	Lorrain	*Cabo Mining*
3014079	Jun 17/2004	17-Jun-2007	4	1,600	Lorrain	*Cabo Mining*
3014080	Jun 17/2004	17-Jun-2007	3	1,200	Lorrain	*Cabo Mining*
3005873	Jun 17/2004	17-Jun-2007	9	3,600	South Lorrain	*Cabo Mining*
3002205	Jun 17/2002	17-Jun-2007	1	800	Gillies Limit (N)	*Outcrop*
3007540	22-Jun-05	22-Jun-2007	2	600	Gillies Limit (N)	*Cabo Mining*
3007573	22-Jun-05	22-Jun-2007	1	400	Gillies Limit (N)	*Cabo Mining*
3007574	22-Jun-05	22-Jun-2007	2	800	Gillies Limit (N)	*Cabo Mining*
3007575	22-Jun-05	22-Jun-2007	3	1,200	Gillies Limit (N)	*Cabo Mining*
3007689	22-Jun-05	22-Jun-2007	1	400	Gillies Limit (N)	*Cabo Mining*
4203248	22-Jun-05	22-Jun-2007	2	800	Gillies Limit (N)	*Cabo Mining*
1135373	Jun 24/2003	24-Jun-2007	8	3,200	Lorrain	*Cabo Mining*
1247790	Jun 27/2001	27-Jun-2007	1	400	Gillies Limit (N)	*Outcrop*
1247791	Jun 27/2001	27-Jun-2007	1	400	Gillies Limit (N)	*Outcrop*
1247794	Jun 27/2001	27-Jun-2007	3	1,200	Gillies Limit (N)	*Outcrop*
3013741	Jun 30/2004	30-Jun-2007	1	400	Gillies Limit (N)	*Outcrop*
3013742	Jun 30/2004	30-Jun-2007	1	400	Gillies Limit (N)	*Outcrop*
1118210	Mar 04/1997	4-Jul-2007	6	2,400	Bucke	*Cabo Mining*
1118211	Mar 04/1997	4-Jul-2007	4	368	Bucke	*Cabo Mining*
779310	18-Jul-05	18-Jul-2007	6	2,400	Gillies Limit (N)	*Cabo Mining*
1230445	Mar 21/1997	21-Jul-2007	15	6,358	Lorrain	*Cabo Mining*
1230446	Mar 21/1997	21-Jul-2007	14	5,600	Lorrain	*Outcrop*
1230454	Mar 21/1997	21-Jul-2007	16	6,400	Lorrain	*Outcrop*
3004218	Aug 08/2002	8-Aug-2007	15	6,000	Gillies Limit (N)	*Outcrop*
3004219	Aug 08/2002	8-Aug-2007	4	1,449	Gillies Limit (N)	*Outcrop*
3004220	Aug 08/2002	8-Aug-2007	14	5,600	Gillies Limit (N)	*Outcrop*
1174378	Aug 15/2001	15-Aug-2007	2	800	Gillies Limit (N)	*Outcrop*
1174379	Aug 15/2001	15-Aug-2007	2	800	Gillies Limit (N)	*Outcrop*
1174507	Aug 15/2001	15-Aug-2007	1	400	Gillies Limit (N)	*Outcrop*
1225264	Aug 19/1999	19-Aug-2007	4	1,600	Lorrain	*Cabo Mining*
1225265	Aug 19/1999	19-Aug-2007	2	800	Lorrain	*Cabo Mining*
1225718	Aug 19/1999	19-Aug-2007	2	800	Lorrain	*Cabo Mining*
1225721	Aug 19/1999	19-Aug-2007	4	1,600	Lorrain	*Cabo Mining*
1163096	Aug 30/2002	30-Aug-2007	1	400	Gillies Limit (N)	*Outcrop*
1229428	Sep 23/2002	23-Sep-2007	4	1,600	Gillies Limit (N)	*Outcrop*
1229429	Sep 23/2002	23-Sep-2007	1	400	Gillies Limit (N)	*Outcrop*
1229430	Sep 23/2002	23-Sep-2007	1	400	Gillies Limit (N)	*Outcrop*
1229432	Sep 23/2002	23-Sep-2007	1	400	Gillies Limit (N)	*Outcrop*
1229433	Sep 23/2002	23-Sep-2007	1	400	Gillies Limit (N)	*Outcrop*
1212225	May 31/1996	30-Sep-2007	2	800	Gillies Limit (N)	*Outcrop*
1217456	May 31/1996	30-Sep-2007	1	400	Gillies Limit (N)	*Outcrop*
1240236	Oct 06/2000	6-Oct-2007	1	400	Gillies Limit (N)	*Outcrop*
1247788	Oct 06/2000	6-Oct-2007	1	400	Gillies Limit (N)	*Outcrop*
1247789	Oct 06/2000	6-Oct-2007	1	400	Gillies Limit (N)	*Outcrop*
1212226	Jun 07/1996	7-Oct-2007	3	1,200	Gillies Limit (N)	*Outcrop*
1240227	Oct 15/1999	15-Oct-2007	3	1,200	Gillies Limit (N)	*Outcrop*
1240228	Oct 15/1999	15-Oct-2007	5	2,000	Gillies Limit (N)	*Outcrop*

1240229	Oct 15/1999	15-Oct-2007	2	800	Gillies Limit (N)	*Outcrop*
1240231	Oct 15/1999	15-Oct-2007	1	400	Gillies Limit (N)	*Outcrop*
1163097	Nov 01/2002	1-Nov-2007	4	1,600	Lorrain	*Cabo Mining*
1177998	Nov 01/2002	1-Nov-2007	8	3,200	Lorrain	*Cabo Mining*
1231085	Nov 12/1998	12-Nov-2007	1	400	Gillies Limit (N)	*Outcrop*
1212231	Jul 22/1996	21-Nov-2007	1	400	Gillies Limit (N)	*Outcrop*
1135378	Dec 02/2002	2-Dec-2007	10	4,000	Gillies Limit (N)	*Cabo Mining*
1212395	Dec 02/2002	2-Dec-2007	8	3,200	Gillies Limit (S)	*Cabo Mining*
1135379	Dec 02/2002	2-Dec-2007	6	2,400	Gillies Limit (N)	*Outcrop*
3010727	Dec 02/2002	2-Dec-2007	3	1,200	Gillies Limit (N)	*Outcrop*
3010728	Dec 02/2002	2-Dec-2007	1	400	Gillies Limit (N)	*Outcrop*
1135375	Dec 04/2002	4-Dec-2007	1	400	Gillies Limit (N)	*Outcrop*
1174462	Jan 25/2002	25-Jan-2008	1	400	Gillies Limit (N)	*Outcrop*
3005758	Feb 13/2004	13-Feb-2008	2	800	Gillies Limit (N)	*Cabo Mining*
3005868	Feb 13/2004	13-Feb-2008	3	1,200	Gillies Limit (N)	*Cabo Mining*
3005869	Feb 13/2004	13-Feb-2008	15	6,000	Gillies Limit (N)	*Cabo Mining*
3005874	Feb 13/2004	13-Feb-2008	2	800	Gillies Limit (N)	*Cabo Mining*
3005759	Feb 13/2004	13-Feb-2008	6	2,400	Gillies Limit (N)	*Outcrop*
1231082	Feb 25/1999	25-Feb-2008	2	800	Gillies Limit (N)	*Outcrop*
1231083	Feb 25/1999	25-Feb-2008	8	3,200	Gillies Limit (N)	*Outcrop*
1231084	Feb 25/1999	25-Feb-2008	13	4,750	Gillies Limit (N)	*Outcrop*
1229431	Feb 26/2002	26-Feb-2008	8	3,200	Gillies Limit (N)	*Cabo Mining*
4206085	April 13, 2006	13-Apr-2008	12	4,800	Lorrain	*Cabo Mining*
4206091	June 21, 2006	21-Jun-2008	1	400	Gillies Limit (N)	*Seymour Sears*
4206092	June 21, 2006	21-Jun-2008	1	400	Gillies Limit (N)	*Seymour Sears*
4206093	June 21, 2006	21-Jun-2008	1	400	Gillies Limit (N)	*Seymour Sears*
4206090	June 21, 2006	21-Jun-2008	1	400	Lorrain	*Seymour Sears*
4206089	July 12, 2006	12-Jul-2008	2	800	Gillies Limit (N)	*Seymour Sears*
4206129	Aug 21, 2006	21-Aug-2008	1	400	Gillies Limit (N)	*Outcrop*
4206129	Aug 21, 2006	21-Aug-2008	1	400	Lorrain	*Outcrop*
4206083	Oct 13, 2006	8-Oct-2008	8	4800	Lorrain	*Cabo MIning*
1193780	Feb 27/1997	29-Jun-2011	1	329	Bucke	*Cabo Mining*
1193781	Feb 27/1997	29-Jun-2011	1	96	Bucke	*Cabo Mining*
1247797	Jul 27/2003	27-Jul-2012	1	174	Coleman	*Outcrop*

LOCATION AND ACCESS

The Cobalt Area Project properties are located approximately 150 km north of North Bay and 100 km south of Kirkland Lake, Ontario. Provincial Highway 11B, leading to the northeast from Trans-Canada Highway 11, provides road access to the towns of Cobalt and Haileybury from which secondary roads lead into most of the claim groups **(Figures 1, 2 & 3)**.

PHYSIOGRAPHY

Local relief in the area varies up to a maximum of about 100 metres. Lake Timiskaming is 585 feet (178 m) above sea level. Diabase sills often form prominent hills with steep ledges and cliffs with the intervening valleys generally swamp filled. The Montreal River passes through the western and southern parts of the claim group, and is typically flanked by extensive gravel and sand deposits.

Forest cover consists of a mixture of poplar, birch, spruce and various pines. An abundance of shrubs and willows as thick underbrush makes traversing difficult.

The area experiences a continental climate with long cold winters and short hot summers. Daytime temperatures can range from a low of -35qC in the winter months to a high of 35qC in the summer months. Yearly precipitation is of the order of 800 mm, occurring as rain and snow. Abundant snow cover adversely affects exploration activities such as geological mapping, but has limited affects on geophysical surveying or core drilling. Both open pit and underground mining may be conducted year round.

HISTORY

Silver was first discovered in the Cobalt mining camp in 1903. Numerous small and large producers were in operation until 1992 (the best estimate is 77 mines) with total production estimated at over 500 million ounces of silver, 50 million lbs. of cobalt, 5 million lbs. of copper, 150 million lbs. of arsenic, 3.1 million lbs. of nickel, 1.2 million lbs. of lead, and 394,000 lbs. of bismuth. No mining operations are active in the area today, but one custom milling operation remains open. The exploration history for the arsenide silver-cobalt vein type deposits and VMS type deposits within Archean basement rocks has been summarized in Douville (2001).

The exploration history for diamond bearing lamprophyre dykes has been summarized in Pryslak (2003). Exploration activities on the properties since the report by Pryslak (2003) concentrated on arsenide silver-cobalt vein type deposits and VMS type deposits. All available assessment reports, files and documents are listed in the references.

GEOLOGY

(a) Regional

The regional geological setting of the Cobalt Area Project properties has been described in both previous NI 43-101 reports (Douville, 2001 and Pryslak, 2003). In general, the area is underlain by inliers of Archean volcano-sedimentary and granitic basement rocks that probably correlate with the Abitibi Subprovince to the north. These rocks are unconformably overlain by relatively flat lying Early Proterozoic Huronian metasedimentary rocks. Nipissing diabase sills and dykes, dated at 2.22 Ga (Andrews et al. 1986b), occur extensively and cross cut both of the above units (Figure 5). All three rock units occur within an approximately 145 km wide basin structure referred to as the Cobalt Embayment. A series of northwest trending faults that are part of the Lake Timiskaming Structural Zone pass through the eastern margin of the Cobalt Embayment.

(b) Property

The Cobalt Area Project properties cover the equivalent of nearly an entire township within the Cobalt Mining Camp, and thus have a varied geology that includes all of the regional units mentioned above. A granitic stock, the Lorrain Granite, underlies most of Lorrain Township on the east side of the Project properties **(Figure 4)**. Archean mafic to felsic metavolcanic rocks wrap around the northern, western and southern sides of the granite, and occupy local embayments in the granitic body. The metavolcanic rocks are generally vertical to steeply dipping, and trend northwesterly. The Lorrain Granite is assumed to be younger than the metavolcanic rocks. A number of mafic to ultramafic lamprophyres form dykes and small intrusive bodies that cross cut both the metavolcanic rocks and, in some cases, the Lorrain Granite. These must have been emplaced near the end of the intrusion of Lorrain Granite since they are also occasionally cut by it. Diamond bearing varieties of these lamprophyre dykes and intrusion breccias have been found on the properties.

The Huronian sediments that unconformably overly the metavolcanic and granitic rocks consist of conglomerate (boulder to drop-stone), arkose, greywacke and sandstone. They are locally divided into three main formations, the lowermost Coleman Formation overlain by the Firstbrook Formation and the uppermost Lorrain Formation (after Thompson, 1960*c*). These sediments occupy erosion channels and depressions (paleovalleys) in the underlying basement rocks. An extensive system of Nipissing aged diabase sills and dykes has intruded the granite volcanic basement rocks and the Huronian sediments. The sills are variable in thickness (up to 300 metres), and form broad, undulating east-west and north-south trending basins and arches. The last geological units on the properties are sparsely distributed Keweenawan aged (1.45 Ga) narrow, olivine and quartz diabase dykes.

The northwesterly trending Timiskaming Fault passes immediately to the east of the property, along the west shore of Lake Timiskaming. Two parallel faults, the Crosswise Lake and Montreal River faults, trending at 325q pass through the properties. Numerous smaller conjugate faults are also present.

(c) Deposit Types

Three mineral deposits types have been recognized on the Cobalt Area Project properties.

1. "Cobalt-Type" or arsenide silver-cobalt vein deposits: This area is the type locality for epigenetic "Cobalt-Type" or arsenide silver-cobalt vein deposits (Ruzicka and Thorpe, 1995), which are also known as "five-element (Ni-Co-As-Ag-Bi)" veins (Kissin, 1992). They occur predominantly as vertical to steeply dipping veins (Figure 5), and are known from past production records to be narrow but of very high grade (in the thousands of ounces Ag per ton range).

Historically, the most prolific silver producing veins in the Cobalt area were hosted by conglomerates of the Coleman Formation within 100 metres of contacts with diabase sills. The average producing veins were less than 0.3 metres in width and individual ore lenses ranged from 30 to 100 metres in length by less than 50 metres in vertical extent. The ore lens located in the Kerr Lake area adjacent to the Silver Leaf claim (#1247797 of the Project properties) was reported to be the richest silver vein in the world, and measured only 286 feet (87 m) in length by 200 feet (61 m) in depth. It was mined over a width of approximately 2.5 feet (0.76 m), and produced 9,211,279 oz. of silver (Sergiades, 1968), which is equivalent to 217 oz. Ag per square foot of vein area (Thomson, 1961g). The most productive 40-acre claim was probably the Coniagas with a production of nearly 34 million oz. Ag or the Nipissing R.L. 404 with an estimated production of 40 million oz. Ag (Sergiades, 1968). Four small past producers (Table 2) are located within the Project properties, along with at least 20 old exploration shafts, three adits and literally thousands of exploration pits and trenches. Various sub-types of the arsenide Ag-Co deposits in the Cobalt area have been described in Douville (2001).

TABLE 2
Past Producers Within The Cobalt Area Project Properties.
(Production and Grade Data from Sergiades (1968)

Producer Name	**Production**	**Grade**	**Production**
	Ag (oz.)	**Oz. Ag/ton**	**Co (lbs.)**
Silver Leaf	495,443	1,516	1,206
Waldman	33,525	-	2,066
Lang-Caswell	1,503	-	4,932
T.T.L. (North Cobalt)	1,453	207	-

2. **VMS base metal deposits**: The Archean mafic to felsic metavolcanic rocks have good potential to host economic volcanic-associated massive sulphide (VMS) base metals and/or gold deposits as occur in the Archean Abitibi Subprovince, just 50 km to the north. The reader is referred to Douville (2001) for a more detailed review of these types of deposits. Within the Cobalt Camp, the Foster No. 5 vein was the largest individual base metal producer, and was associated with a band of interflow sedimentary rocks up to 25 feet (7.6 m) thick in Archean metavolcanic rocks. The sedimentary rocks comprised mainly chert and minor black carbonaceous sediments and tuff. Sphalerite, galena, chalcopyrite, pyrite, and pyrrhotite have in part replaced the chert and an assay of completely replaced chert returned 20.15% Zn, 8.37% Pb, 0.58% Cu, 0.28% Co, 1.53 oz./ton (52.5 g/t)

Ag, and trace Au. Silver-cobalt calcite veins cross cut the base metal mineralization. In 1951, reserves were reported to be in excess of 300,000 tons (272,158 tonnes) containing 3% Zn, 1.5% Pb, 0.5% Cu, and 0.75 oz./ton (25.7 g/t) Ag. An independent reserve estimate indicated 200,000 tons (181,439 tonnes) containing 2.42% Zn, 1.62% Pb, 0.38% Cu, and 0.85 oz./ton (29.1 g/t) Ag (Thomson, 1961*g*). Both of the above estimates are pre NI 43-101 and are unlikely to be 43-101 compliant. The mineralization occurs over a length of about 700 feet (213 m), to a depth of about 500 feet (152 m) and averages about 12 feet (3.66 m) in width.

3. **Diamond deposits associated with kimberlite and lamprophyre intrusions**: The properties lie within a zone referred to as the Timiskaming Structural Zone (Sage, 1996, 1998). At least 14 kimberlite pipes have been located immediately north of the Project properties in the area around New Liskeard. In addition, numerous lamprophyre dykes and a large lamprophyre breccia body occur in the southern part properties. These dykes and breccia bodies are similar to diamondiferous dykes and breccias that are being actively evaluated in the Wawa area of Ontario (Spider Resources Inc. website). To date, 92 micro-diamonds and 4 macro-diamonds have been recovered from exploration drill core samples from a lamprophyric breccia pipe in the Pan Lake – Anderson Lake area (Cabo Press releases, June 17, 2002 & March 7, 2003). For additional information on the diamond potential of the properties, the reader is referred to Pryslak (2003).

(d) Mineralizaion

Several Ag-Co as well as diamond mineral occurrences are known on the properties. These have been described in detail by Douville (2001) and Pryslak (2003), and are not repeated here. Those mineral occurrences visited by the Author are described below.

Mineralization at the Professor Adit occurs in narrow steeply dipping to vertical calcite-quartz veins generally trending at 045º - 100º that are hosted for the most part by mafic metavolcanic rocks. The adit is about 565 metres long, but only the first 285 metres can be accessed safely. Grab samples #93951 and #93952 were taken from 10-12 cm wide parts of the #3 vein, and contained minor Co bloom and minor amounts of metallic minerals.

Mineralization in the Cumming Pits area consists of shallowly dipping calcite veins, and a quartz, with minor calcite, breccia zone that are hosted by Nipissing Diabase. Grab sample #93953, containing minor galena and Ni bloom, was taken from a 10 cm thick calcite vein striking at 115º and dipping at 20ºS. Grab sample #93954, containing minor Co bloom, was taken from the breccia in the face of one of the pits. The breccia strikes at ~020º and dips vertically.

In the vicinity of the Waldman #1 Shaft, mineralization occurs in narrow, steeply dipping to vertical, calcite veins generally trending at 090º that are hosted by pillowed mafic metavolcanic rocks. Grab sample #93955 was selected from a 10 cm wide vein containing vuggy calcite and ~5% galena and pyrite. Grab sample #93956 was taken from a “rotten” (highly oxidized) 4 cm wide vein with abundant Co bloom.

Three samples of core from drilling at the Waldman property were selected for check assays. Sample #93960, taken from Hole COB-19 (0.30 m interval from 20.6 0 –20.90 m), contains a 3 cm wide calcite vein with a 1 mm width of arsenopyrite along its lower margin. Hole COB-23 was sampled in two places. Sample # 93958 was selected from a 0.35 m wide interval (28.20 – 28.55 m) containing a calcite vein with arsenopyrite. Sample #93959, of a calcite vein with pyrite, chalcopyrite and sphalerite was taken immediately below a 0.40 m wide interval (28.55 – 28.95 m).

One sample, #93957, was taken from a 0.22 m interval (129.43 – 129.65 m) of core obtained from Hole COB-24 drilled on the Silver Leaf property. The sample contains a 1 mm wide cobaltite or smaltite filled fracture.

GRID EMPLACEMENT

The work on grid one was begun on February 22nd, 2007. Lines were cut out every 100 meters in a north-south direction and stations placed every 25 meters. The last five digits of the UTM coordinates, NAD 83, were used for the grid coordinates. After the grid was emplaced, each 25-meter station was surveyed in with a survey-quality GPS unit, that is with an accuracy of less than 0.5 meters for horizontal coordinates as well as for the elevation.

During this time, the weather was quite difficult with the wind chill reaching -40°C.

The last line, the one closest to the road, was cut out but could not be surveyed due to an injury to one of the crew. The line was then surveyed in by a later crew.

Grid two, which occurs less than a kilometer to the south of grid one, had been previously cut out, except for two lines. The second crew therefore cut these two lines out and resurveyed in the entire grid also using UTEM coordinates for the grid coordinates.

Grid one totaled 19,450 meters in survey lines and a baseline of 1,700 meters, whereas grid two totaled 7,200 meters in survey lines and a baseline of 1,000 meters.

UTEM SURVEY

The total description and interpretation is given in the report’s appendix which consists of a report by Lamontagne Geophysics Ltd.

MMI SOIL SAMPLING

(a) Sampling Procedure

The samples were picked up every 12.5 meters on the 100-meter separated lines. The total number of MMI samples for the purpose of this report is 551. The MMI sampling is ongoing and thus the remainder of the sample results will be given in a later report.

The sampling procedure was to first remove the organic material from the sample site (A_0 layer) and then dig a pit over 25 cm deep with a shovel. Sample material was then scraped from the sides of the pit over the measured depth interval of 10 centimeters to 25 centimeters. About 250 grams of sample material was collected and then placed into a plastic Zip-loc sandwich bag with the sample location marked thereon. The 111 samples were then packaged and sent to SGS Minerals located at 1885 Leslie Street, Toronto, Ontario. (This is only one of two labs in the world that do MMI analysis, the other being in Perth, Australia where the MMI method was developed.)

(b) Analytical Methods

At SGS Minerals, the testing procedure begins with weighing 50 grams of the sample into a plastic vial fitted with a screw cap. Next is added 50 ml of the MMI-M solution to the sample, which is then placed in trays and put into a shaker for 20 minutes. (The MMI-M solution is a neutral mixture of reagents that are used to detach loosely bound ions of any of the 38 elements from the soil substrate and formulated to keep the ions in solution.) These are allowed to sit overnight and subsequently centrifuged for 10 minutes. The solution is then diluted 20 times for a total dilution factor of 200 times and then transferred into plastic test tubes, which are then analyzed on ICP-MS instruments.

Results from the instruments for the 38 elements are processed automatically, loaded into the LIMS (laboratory information management system which is computer software used by laboratories) where the quality control parameters are checked before final reporting.

(c) Compilation of Data

Three to four elements were chosen out of the 38 reported on and these were gold, silver, and copper, and on some lines, cobalt. The mean background value was calculated for each of the three or four elements and this number was then divided into the reported value to obtain a figure called the response ratio. A stacked histogram was then made for each of the ten lines of samples of the response ratios as shown on figures #4 through to #13, respectively.

In addition, a plan map was made for each of three metals, being gold, silver, copper, , on maps GC-1 to GC-3, respectively. On each map, the data was plotted and contoured at a logarithmic interval.

DISCUSSION OF RESULTS

The MMI survey has revealed 12 very strong anomalous responses on the six survey lines that are very likely indicating the Cobalt-area type arsenide silver-cobalt mineralization. Some of these will be caused by the same vein thus indicating strikes in excess of 100 meters. More detail sampling in between the survey lines in the area of the highs should thus be carried out to help determine the continuity of the causative sources. These very strong anomalies are characterized by anomalous responses of one or two samples wide which is what was expected for this type of very narrow mineralization.

In addition to these 12 very strong anomalies, there also are an additional 12 anomalies that are not as strong as the above 12 but still of strong exploration interest. Considering how narrow these type of veins are, more detail sampling may reveal anomalous responses just as strong as the first 12 anomalies.

The survey also revealed two anomalies that are indicative of sulphide mineralization. The stronger one occurs at the northern end of line 98800E centering at 47550N and the second one at the southeastern corner of the survey area on lines 99200E and 99300E centering at about 46900N. The predominant metal is copper with lower anomalous values of gold, silver and cobalt.

Considering the MMI survey is ongoing, a more detailed interpretation will be given in a later report.

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GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Surrey, in the Province of British Columbia, do hereby certify that:

I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

I am a Consulting Geophysicist of Geotronics Consulting Inc., with offices at 6204 – 125th Street, Surrey, British Columbia.

I further certify that:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.

2. I have been practicing my profession for the past 38 years, and have been active in the mining industry for the past 41 years.

3. This report is compiled from data obtained from UTEM and MMI soil sample surveying along with grid emplacement carried out by a crew of Geotronics Consulting and Lamontagne Geophysics headed by me over two grids within the northern part of the Cobalt Property during period of February 22nd to May 27th 2007.

4. I am a shareholder of International Millennium Mining Corp, holding a total of 20,000 shares. However, I will not be receiving any interest as a result of writing this report.

David G. Mark, P.Geo.
Geophysicist

June 21, 2007

AFFIDAVIT OF EXPENSES

UTEM and MMI soil sample surveying along with grid emplacement and topographical surveying was carried out over the northern portion of Cobalt Property, which occurs to the immediate south of Cobalt, Ontario, during the period of February 22nd to May 27th, to the value of the following:

MOB/DEMOB:		
Crew wages	$5,340.00	
Truck rental and gas	…650.00	
Room and board	900.00	
TOTAL	$6,890.00	$6,890.00
FIELD and LABORATORY:		
Senior Geophysicist, 3 days @ $600/day	$1,800.00	
Line Cutting, 2-man crew, 20 days @ $1,325	$26,500.00	
Rental of Surveying Equipment	1,300.00	
Grid Emplacement and Topographical Surveying, 2-man crew, 27 days @ $1,100/day	$29,700.00	
MMI Survey, 6-man crew, 10 days @ $2,400/day	24,000.00	
Testing of 516 samples @ $35/sample	$18,025.00	
Courier costs for sample shipping	375.00	
TOTAL	$101,700.00	$101,700.00
SUB - CONTRACTING:		
Lamontagne Geophysics	$33,405.00	$33,405.00
DATA REDUCTION and REPORT		
Senior Geophysicist, 52 hours @ $62.50/hour	$3,250.00	$3,250.00
GRAND TOTAL		**$145,245.00**

Respectfully submitted,
Geotronics Consulting Inc.

David G. Mark, P.Geo,
Geophysicist

June 21, 2007

APPENDIX –UTEM REPORT

Logistics Report on a UTEM Survey
Cobalt Area Project
Cobalt, Ontario
For
International Millennium Mining Corp
2007

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

May, 2007

John Frost
Owen Fernley

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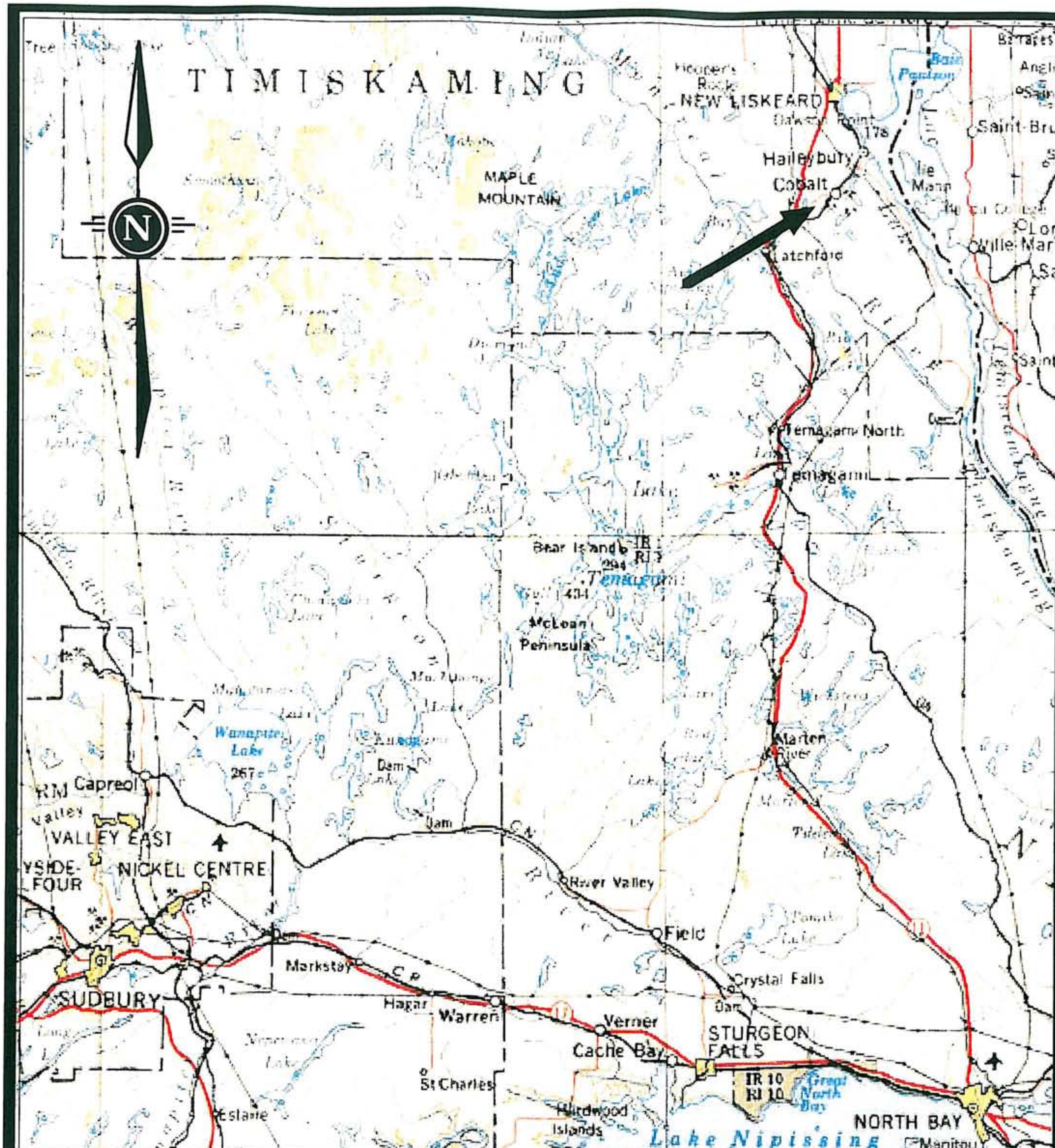
INTRODUCTION

During the period of April 18, 2007 to May 3, 2007, a UTEM surface survey was conducted by Lamontagne Geophysics Ltd. personnel on behalf of Geotronics Ltd, who was contracted by the International Millennium Mining Corp. The data was collected with the intention of locating conductors in the immediate grid area. The property at hand was the Cobalt Area Project, located approximately four kilometers south of Cobalt, Ontario. Cobalt is situated ~150 km north of North Bay on Highway 11, and ~100 km south of Kirkland lake, Ontario on said Highway. (See Figure 1). The crew stayed in Haileybury . The specific grids were accessed from the Hound Chutes Road. (See Figure 2).

A total of 26.65 km of outside-the-loop UTEM data was collected using two transmitter loops with the receiver operating in 10-channel mode. The chosen survey frequency was 30.974 Hz. All lines were surveyed measuring the vertical component, Hz. Stations were spaced at 50 m intervals with survey lines spaced at 100 m intervals (with the exception of line 8440E, situated ~ 60 m from line 8500E. Due to some minor picket errors, or environmental obstacles, some stations were surveyed at the available 25 m intervals, when necessary.

This report documents the UTEM survey in terms of logistics, survey parameters and field work conducted. A brief interpretation is also included. Appendix A contains the collected data presented as reduced profiles. Other appendices contain:

- Production Diary (Appendix B)
- An outline of the UTEM System (Appendix C)
- Notes on sources of anomalous Ch1 (Appendix D)



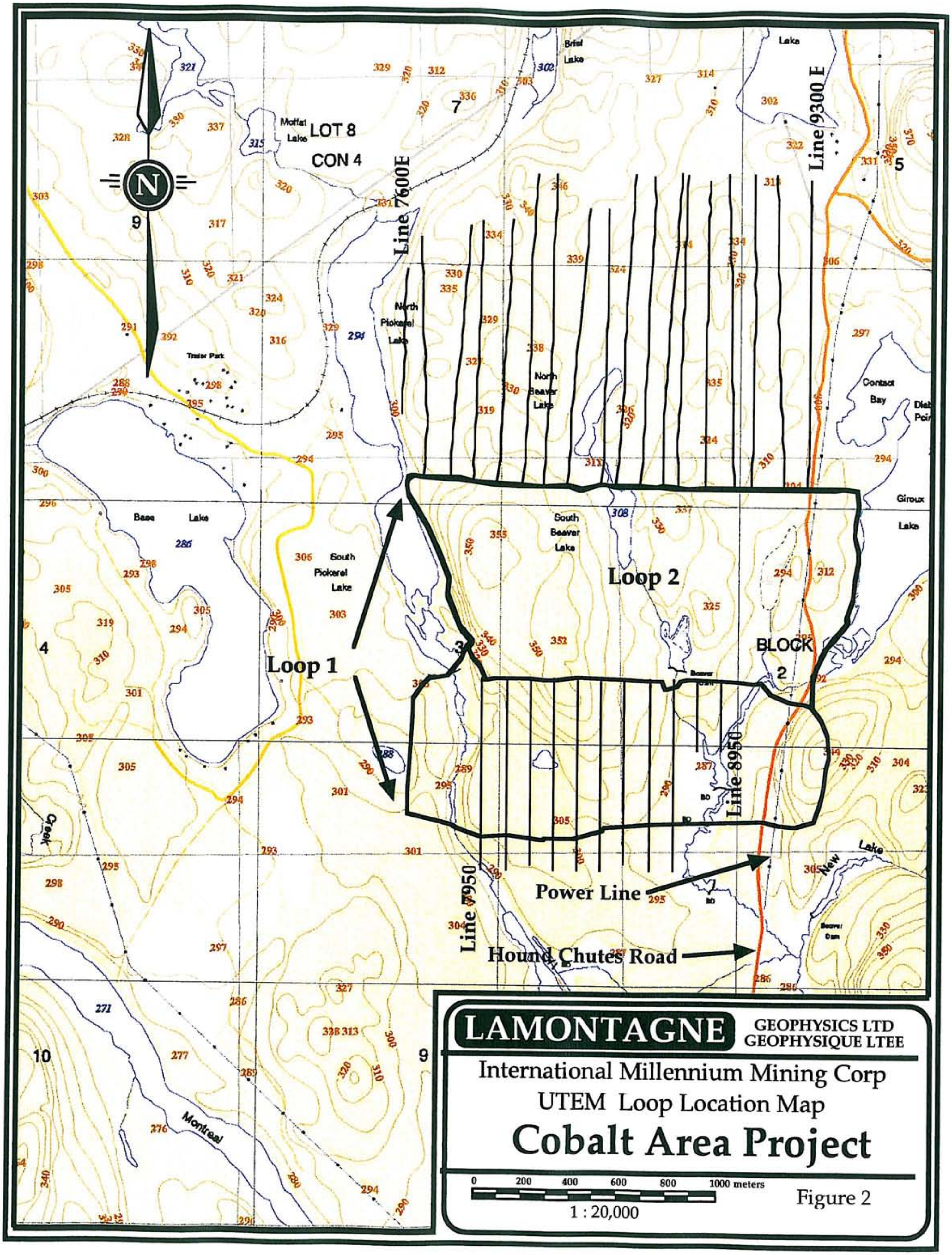
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

International Millennium Mining Corp

Survey Location

Cobalt, Ontario

Scale: 1 : 84000 Figure 1


Line 7600E
Line 9300 E
Line 7950
Line 8950
Loop 1
Loop 2
Power Line
Hound Chutes Road
LOT 8
CON 4
BLOCK 2
Moffat Lake
North Pickerel Lake
North Beaver Lake
South Beaver Lake
South Pickerel Lake
Base Lake
Contact Bay
Giroux Lake
New Lake
Montreal
Creek
Trailer Park
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
International Millennium Mining Corp
UTEM Loop Location Map
Cobalt Area Project
0 200 400 600 800 1000 meters
1 : 20,000
Figure 2

SURVEY DESIGN

Geotronics personnel designed the loop layouts and chose the grid location after discussing the survey with Lamontagne Geophysics. Loop size and location was configured with the depth and orientation of expected targets in mind, with the expectation of achieving ideal coupling. The loops shared a common north side, and loop 2 shared ~800 m of the east and west sides of loop 1. The loop design accommodates a power line that runs parallel to the east side of grid 1. To regulate power line interference, Lamontagne employees extended the boundary of the north and south sides of the loop by ~200 m to the east, effectively surrounding the power line. (see Figure 2)

The basic survey parameters were chosen to achieve good coupling with targets located near or on the grid. The parameters were as follows:

- outside-the-loop coverage
- transmitter loops of ~2 km x 1.4 km (loop 1) and ~2 km x 800 m (loop 2) running along shorelines and other physical features in some areas.
- 14-gauge copper wire
- line spacing of 100 m
- station intervals of 50 m with 25 m station intervals available depending on stacking time, areas of interest, or environmental obstacles
- vertical (Hz) component measurements
- 10-channel data at a frequency of 30.974Hz
- minimum 1K stacking (1024 full-cycles/2048 half-cycles) increased where noise levels dictated to maintain data quality

In the area of mineral exploration, non-decaying Ch1 conductors are indicative of highly conductive mineralization. Any non-decaying anomalous Ch1 features are therefore of interest. Non-decaying Ch1 UTEM anomalies can reflect:

i) the presence of mineralization
ii) the presence of a magnetic anomaly
iii) poor geometric control - either station location or loop location

These are outlined in more detail in Appendix D. From an interpretation point of view this means that magnetics and geometric control should be considered and evaluated as a part of any interpretation. From a field point of view it means that precise geometric control should be part of any UTEM survey where the target is non-decaying. Poor geometric control has the potential to both mask and invent Ch1 conductors.

The GPS control was mostly provided by the client for the first grid, which was read from loop 1, and made available for use in reducing the UTEM data. Lamontagne personnel supplemented the GPS data with station to station inclinometer measurements on the second loop. Inclinometer data matched GPS topographic profiles from loop 1 quite well, and so the reduced data for loop 2 is good. The actual loop location GPS points were collected by Lamontagne personnel with Garmin handheld GPS equipment. In the case of line 9300E, GPS data was projected according to 25 m intervals, as data for this line was missing. The second grid is completely based on 25 m chaining, with elevations calculated using inclinometer data as collected by the Lamontagne survey crew.

SURVEY LOGISTICS

A Lamontagne Geophysics Ltd. crew mobilized from Kingston, Ontario on April 17, proceeding to Sudbury to pick up copper wire before traveling to their final destination of Haileybury. The crew consisted of :

Owen Fernley	crew chief/operator
John Frost	coiler/assistant

Operations were based out of the Haileybury Beach Motel, situated on Lake Temiskaming. Transportation to the survey site took approximately 20 minutes by four wheel drive truck. The Hound Chutes Road paralleled the eastern side of both grids, and was the only access point. This made looping in the west end of the grid cumbersome, as large amounts of wire had to be transported over large distances by foot. Relief from this trek was accented by preexisting cut lines that ran along the north sides of either loop.

The crew began laying wire on April 18th, completing the first loop the following day. On a few occasions, wire was skirted around environmental obstacles such as beaver ponds. The north line (6400N) was already cut, however the remaining sides were put in with a GPS and compass. Surveying began the following day, April 20th.

Initially, it was suspected that data collected from line 9200E (the crew's starting point) was affected by its proximity to a power line running north-south just east of the eastern most lines. However, upon reduction of lines further west, it was established that equipment was causing an intermittent problem, and the crew had to spend time troubleshooting this. Beyond that, surveying conditions were quite favorable and the grids were completed in a timely manner. On two occasions, a loop break prevented the crew from surveying for several hours. Due to poor access, and the break locations being in the far south west corner, it took quite some time to fix. The cause was likely large animal movement. This was remedied by burying the wire under logs and other forest debris in order to reduce the likelihood of animals getting caught in the wire. A partial re-staking was conducted in the southern most grid (grid surveyed from Loop 2) as the existing cut lines were overgrown and pickets had deteriorated.

The equipment used consisted of one UTEM 3 receiver/coil and one UTEM 3 transmitter as well as all necessary accessories, support and back up equipment. Data was reduced on a Powerbook G4 field computer and UTEM profiles in pdf format were made available to Geotronics Ltd. personnel on a regular basis.

Day to day operations are available in the production diary found in Appendix B.

Interpretation

This is a brief interpretation of the results of a UTEM 3 surface survey. Over all, the response indicates weak conductors trending through the middle of Grid 2, and some response in Grid 1 that will be mentioned but is otherwise too weakly conductive to comment further.

Grid 1 is to the north of the common loop and contains 18 lines from 600 to 1250m in length. The data in this grid indicates very little in this area as for conductors. There is some response in the early time channels, such as station 6650N on line 8440E, which is possibly due to a nearby beaver pond, and some decay in the early time channels near the end of lines 8600 to 9300, which may suggest something regional in the northeast quadrant of this grid, however it is only slightly less resistive than its surroundings.

Grid 2 is to the south of the common loop, with eight 800 m lines and two 250 m lines. A crossover is clearly present on line 8350E at station 5200N. The response extends through the early channels and indicates a weak conductor. This response is especially visible between lines 8150E and 8750E. Two contacts are picked up in the early channels at the following locations:

Line	Contact 1	Contact 2
8150E	5100N	5350N
8250E	5100N	5350N
8350E	5100N	5300N
8450E	5100N	5350N
8550E	5050N	5300N
8650E	5000N	5300N
8750E	5000N	5350N

Table 1*: Location of contacts between resistive boundaries on Grid 2*

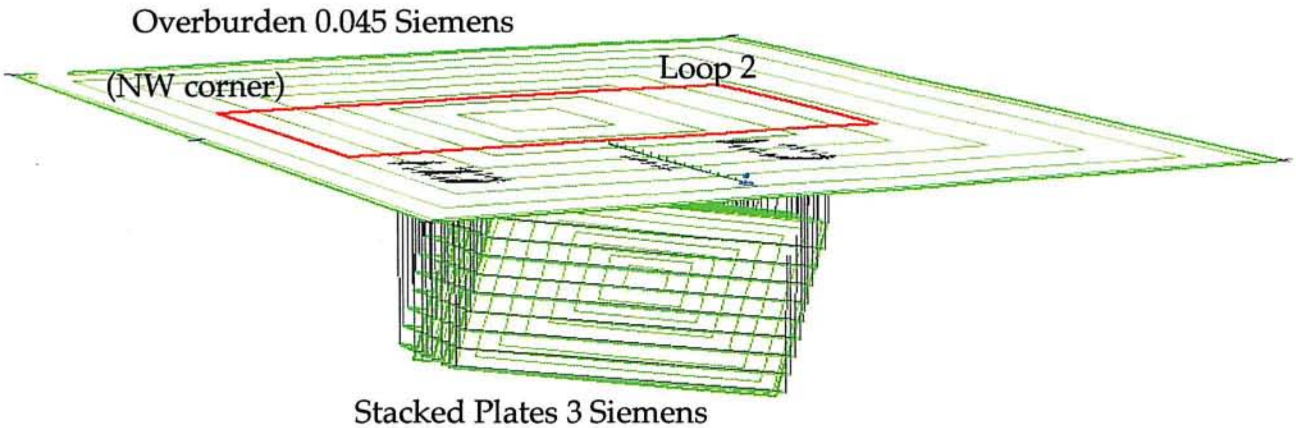
This suggests the ground is less resistive between the two contacts. A positive peak near the loop falls off sharply through Contact 1 and levels out. A sharp change occurs as the model moves back into a more resistive zone at Contact 2. The anomaly is generally more resistive near Contact 2, and more conductive near the loop front.

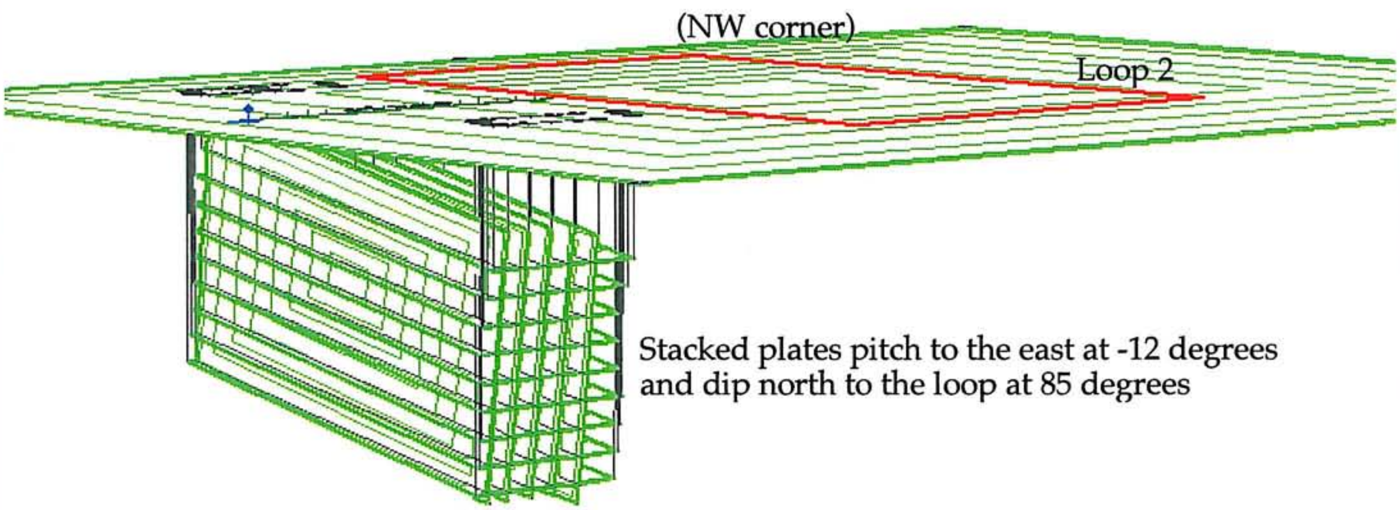
A weakly conductive slab with conductance 3 Siemens was entered into the modelling program Multiloop 2 for evaluation. The slab was modelled as near vertical, dipping North toward the loop, and positioned such that the slab is near the surface in the west and is at depth to the east. A conductive overburden was placed over the region to simulate the background effect noticed in the very early channels. The slab was approximated using a stack of thin conductive plates. (see Figure 3). This model approximates the field data for each line on Grid 2 (see Figures 4 to 14).

A slab shaped plate was installed in Multiloop 3, as this can model a continuous current around the slab with no need for stacking plates. This model is included as an example of a typical response for a UTEM survey over a slab of this orientation (see Figure 15).

Although the data was assembled with care using inclinometer and GPS data, some geometric control was lost on the loop front. This is because the handheld GPS information collected from the loop had to be correlated with the inclinometer or GPS information collected for each grid. As a result, some Channel 1 anomalies are seen close to the loop front of some lines.

The position of the loop to the north of the grid is good to achieve the desired coupling effect. It is conductive enough that its shape can be estimated as a vertical slab or wedge. However, the response is observed in the early time channels only. The late time channels are less responsive and suggest the anomalies are very weakly conductive.



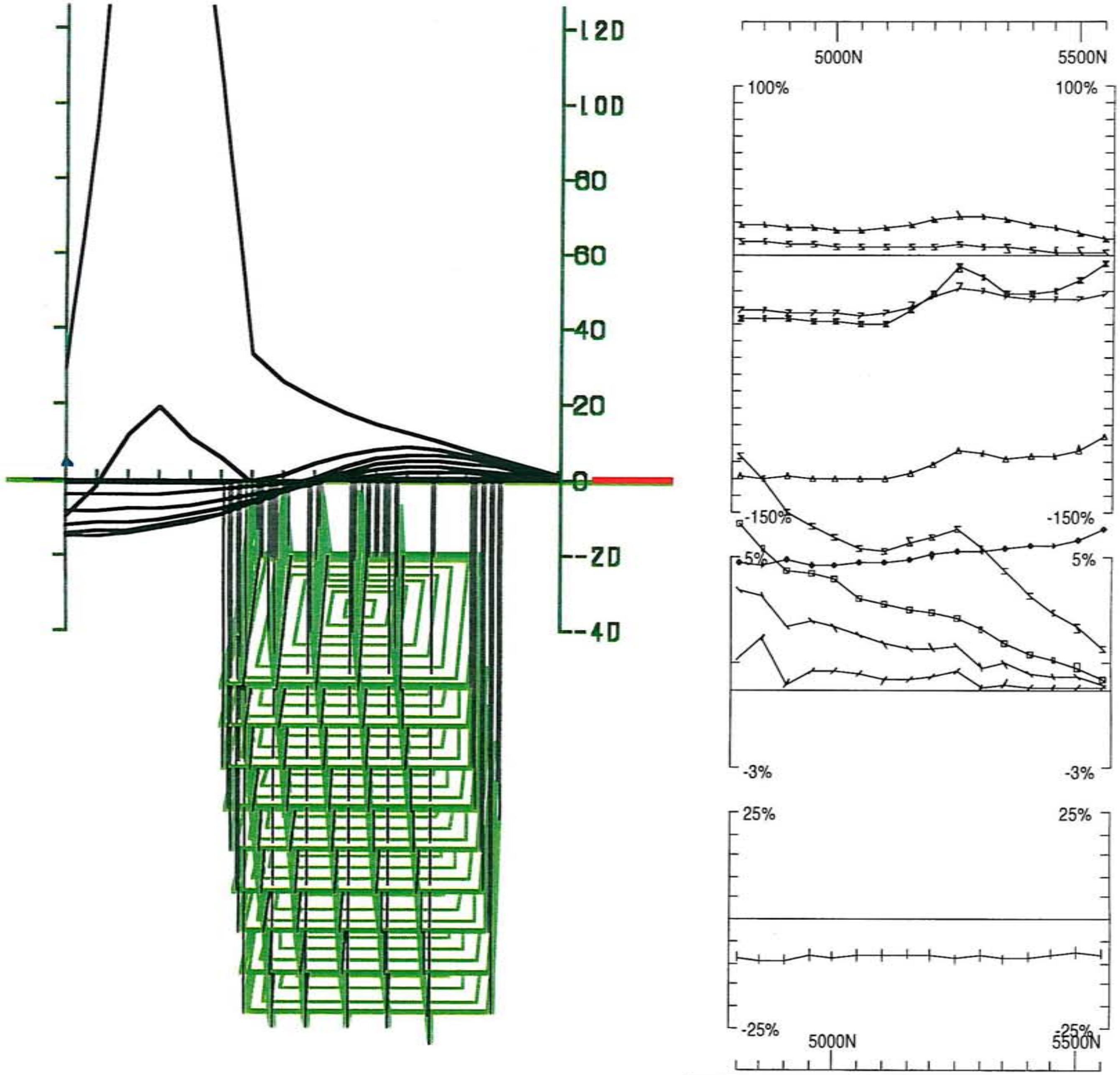


LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

International Millennium Mining Corp
Slab Model with Overburden

Multiloop 2 Section

Figure 3



Loop: 2	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Cobalt Grid
Line: 7950E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed: 30/4/7 Reduced: 28/5/7 Plotted: 11/6/7

Figure 4: Multiloop Data and Field Data for line 7950E

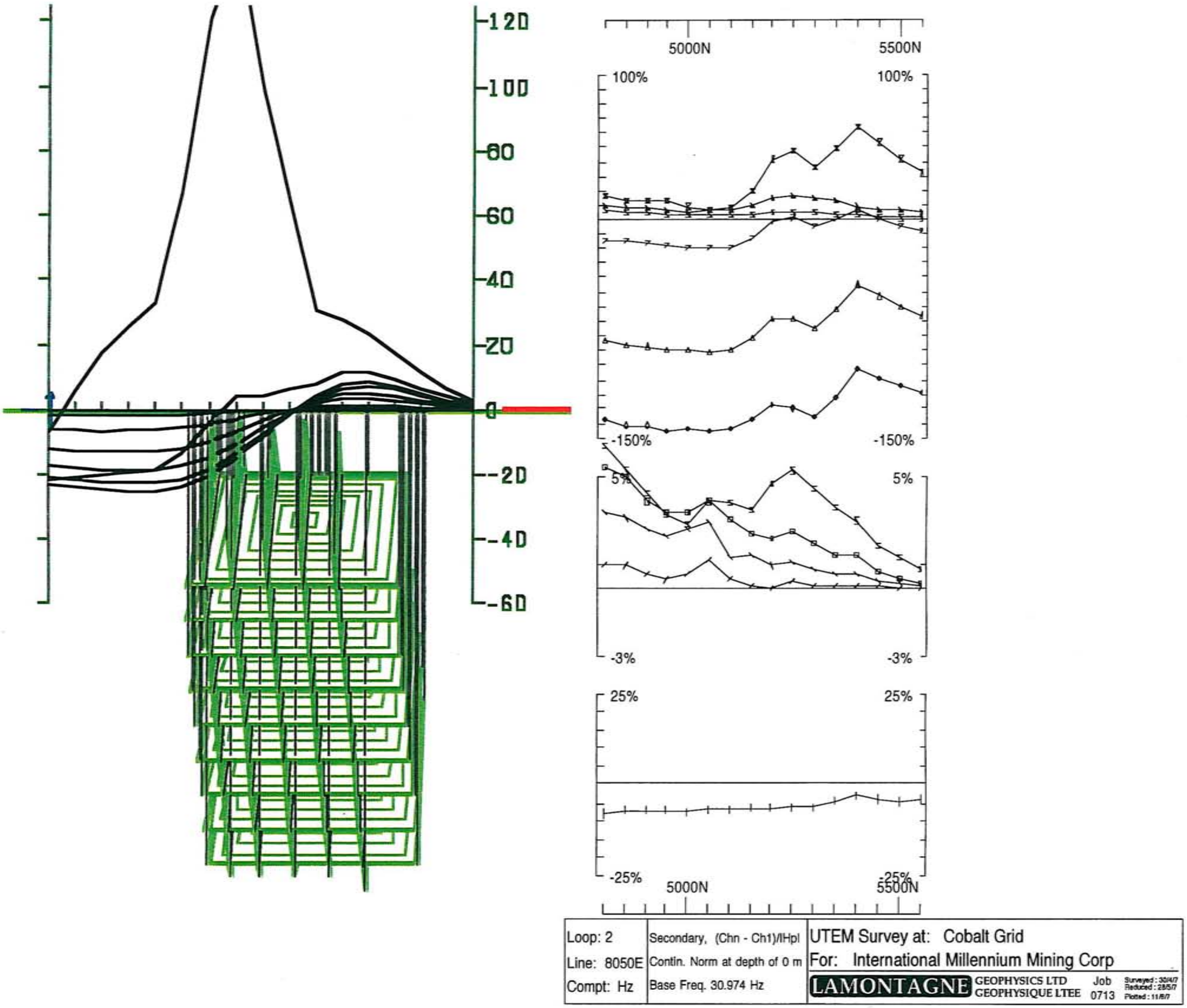


Figure 5: Multiloop Data and Field Data for line 8050E

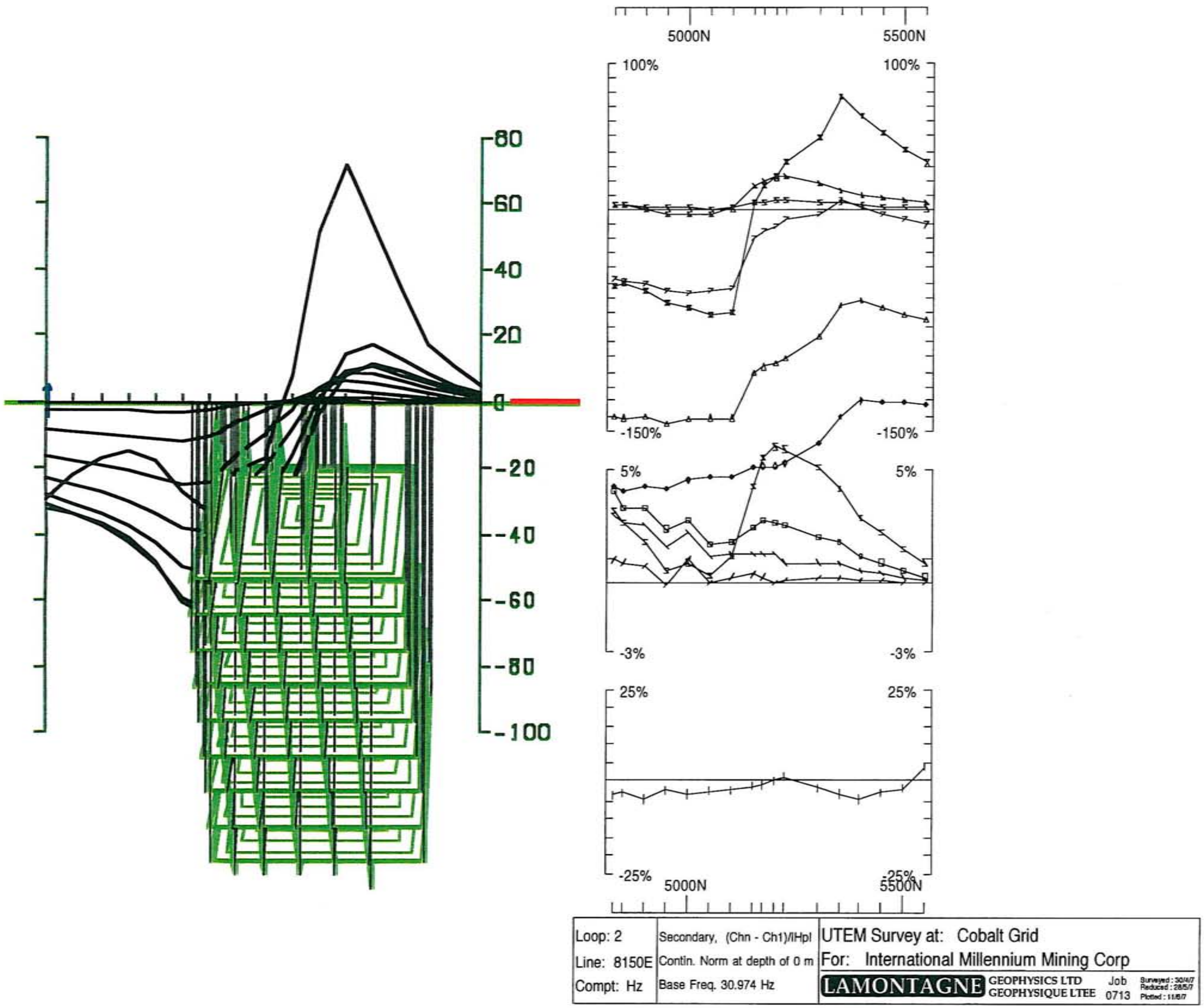


Figure 6: Multiloop Data and Field Data for line 8150E

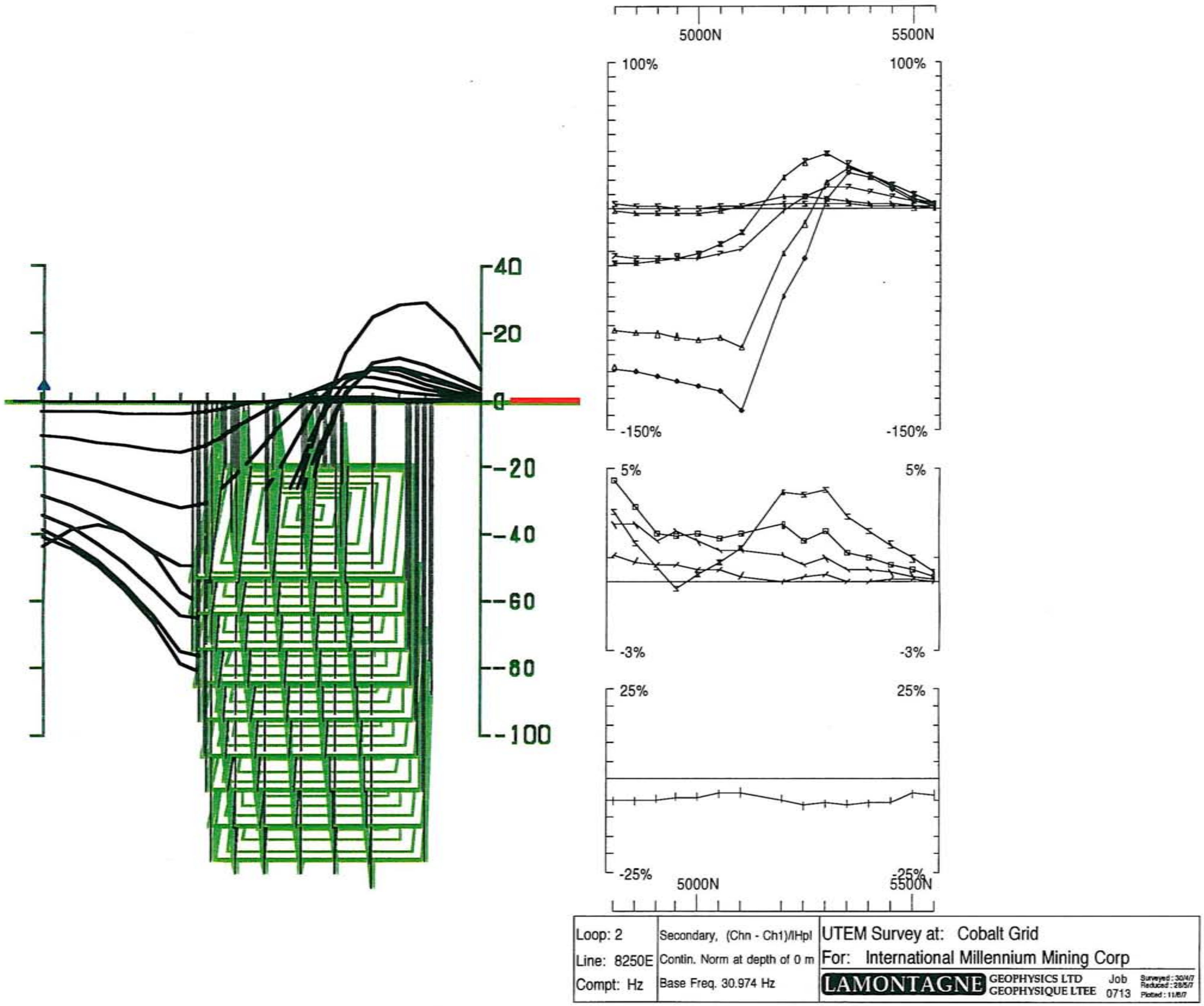


Figure 7: Multiloop Data and Field Data for line 8250E

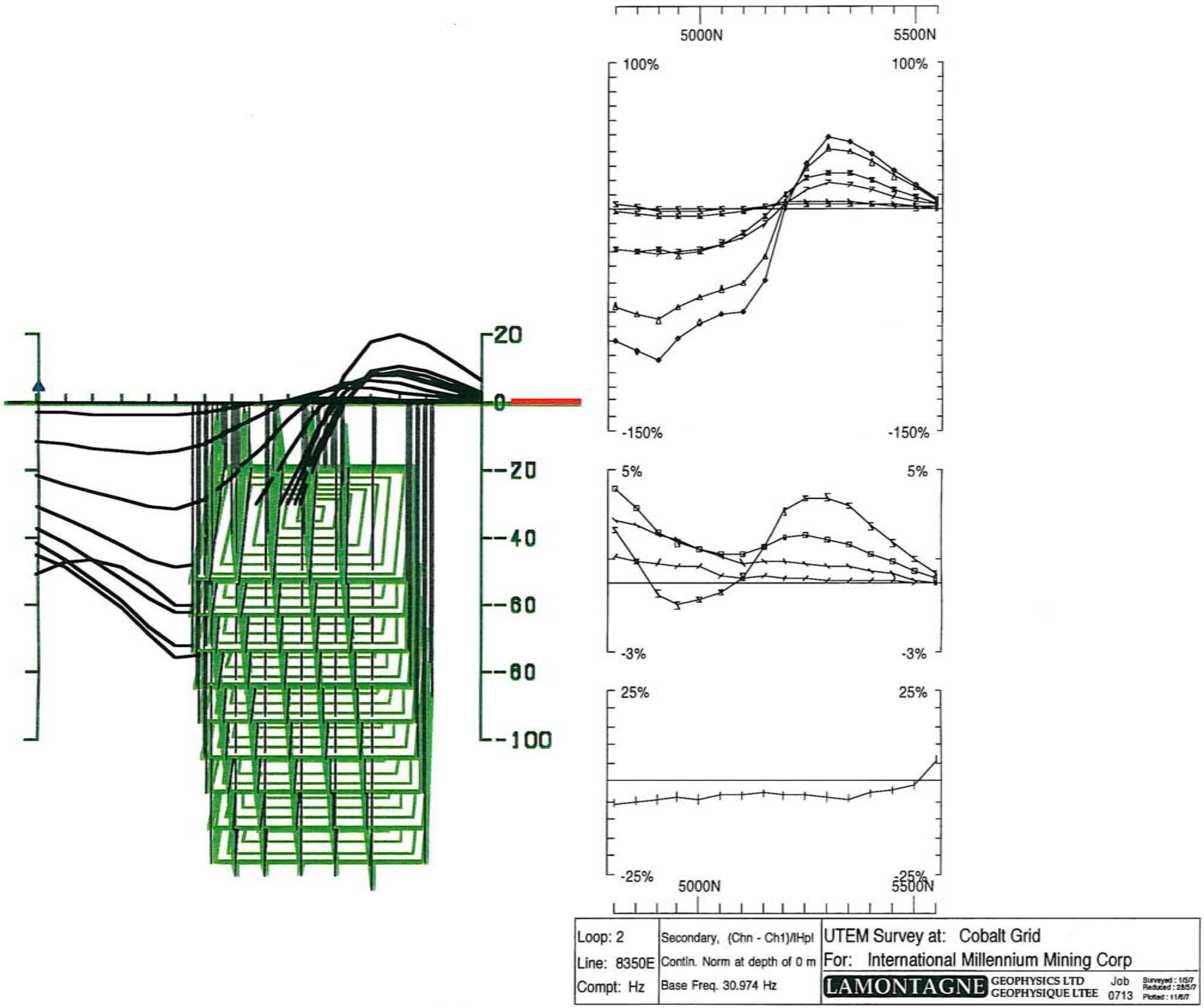


Figure 8: Multiloop Data and Field Data for line 8350E

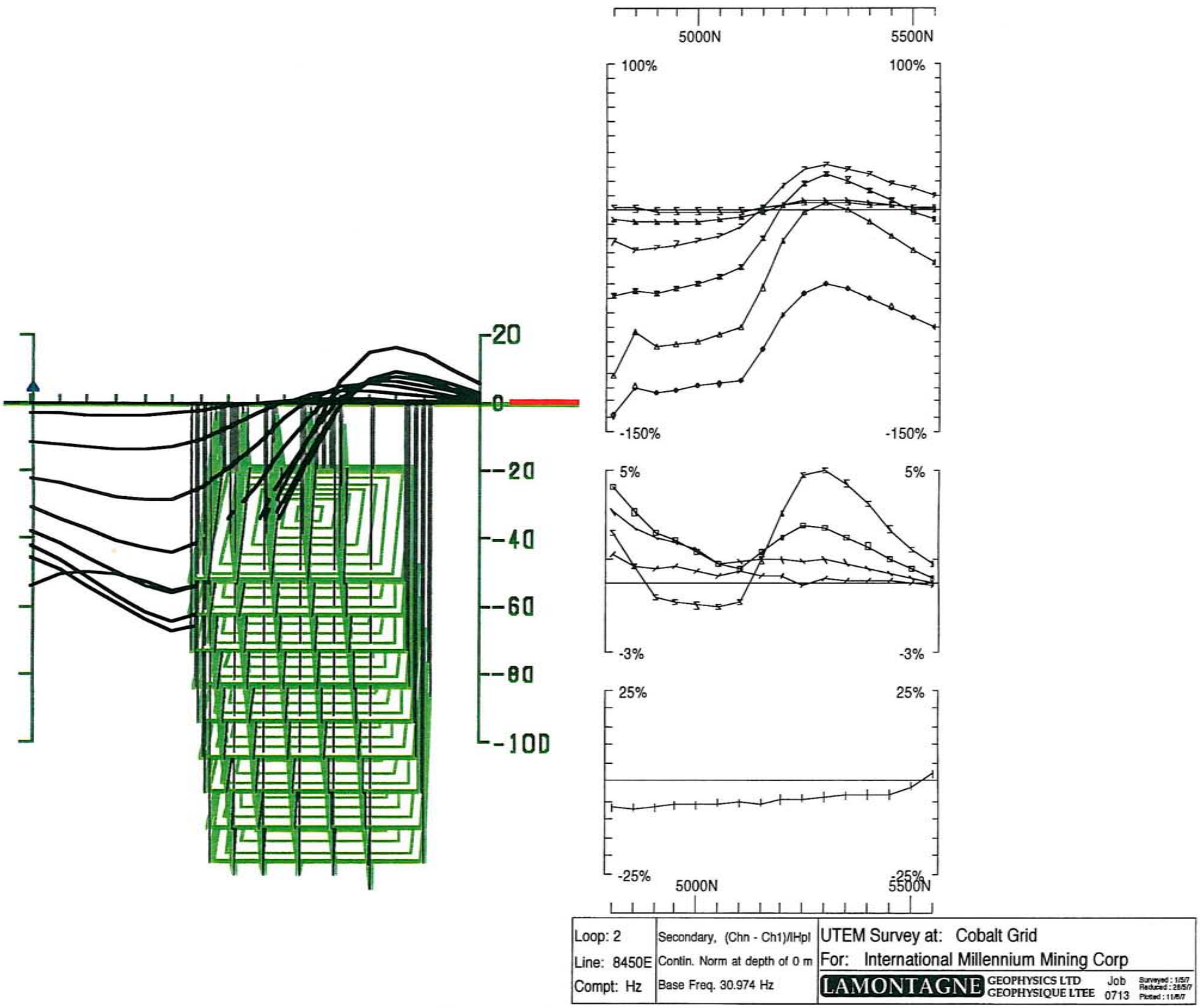


Figure 9: Multiloop Data and Field Data for line 8450E

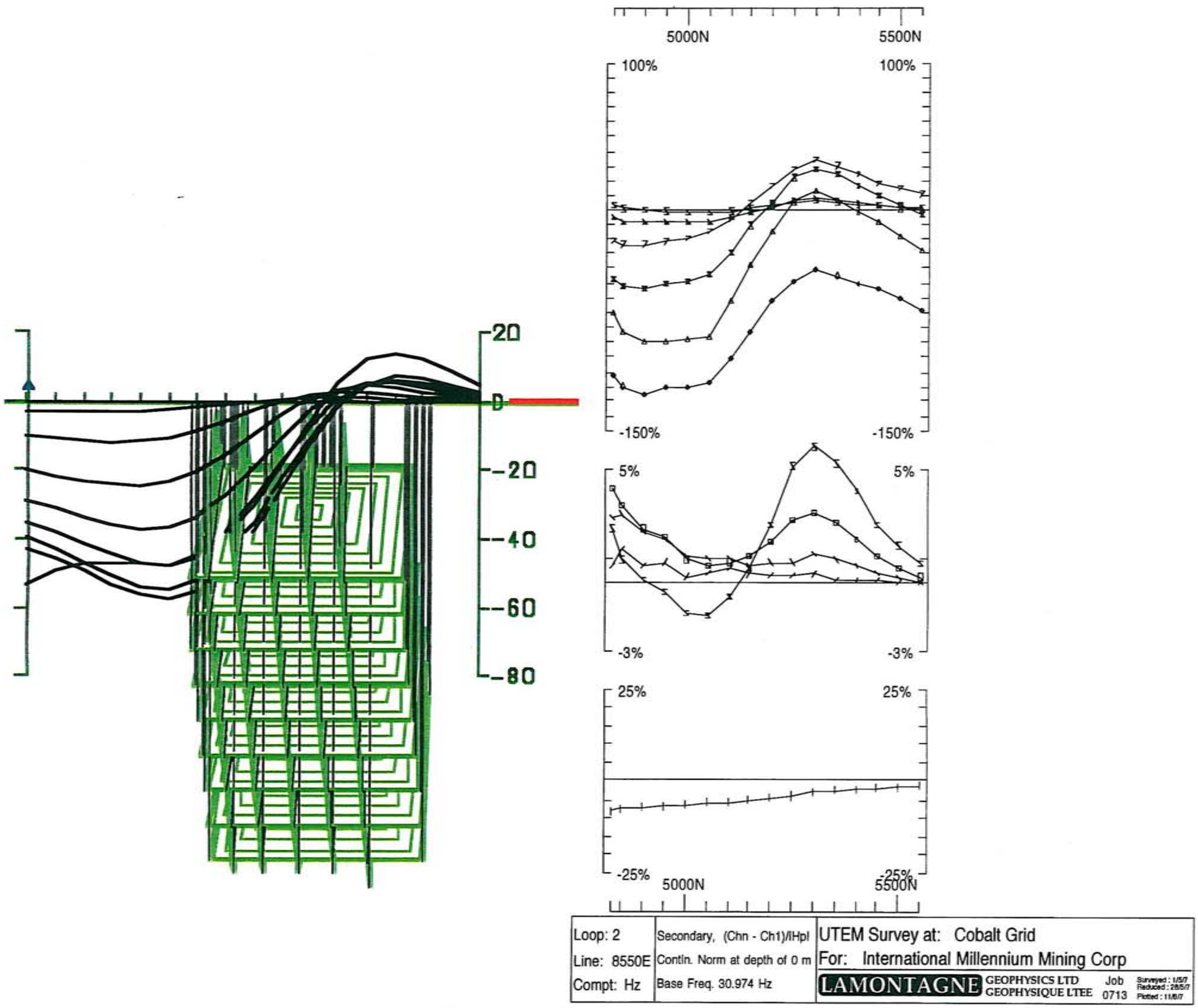


Figure 10: Multiloop Data and Field Data for line 8550E

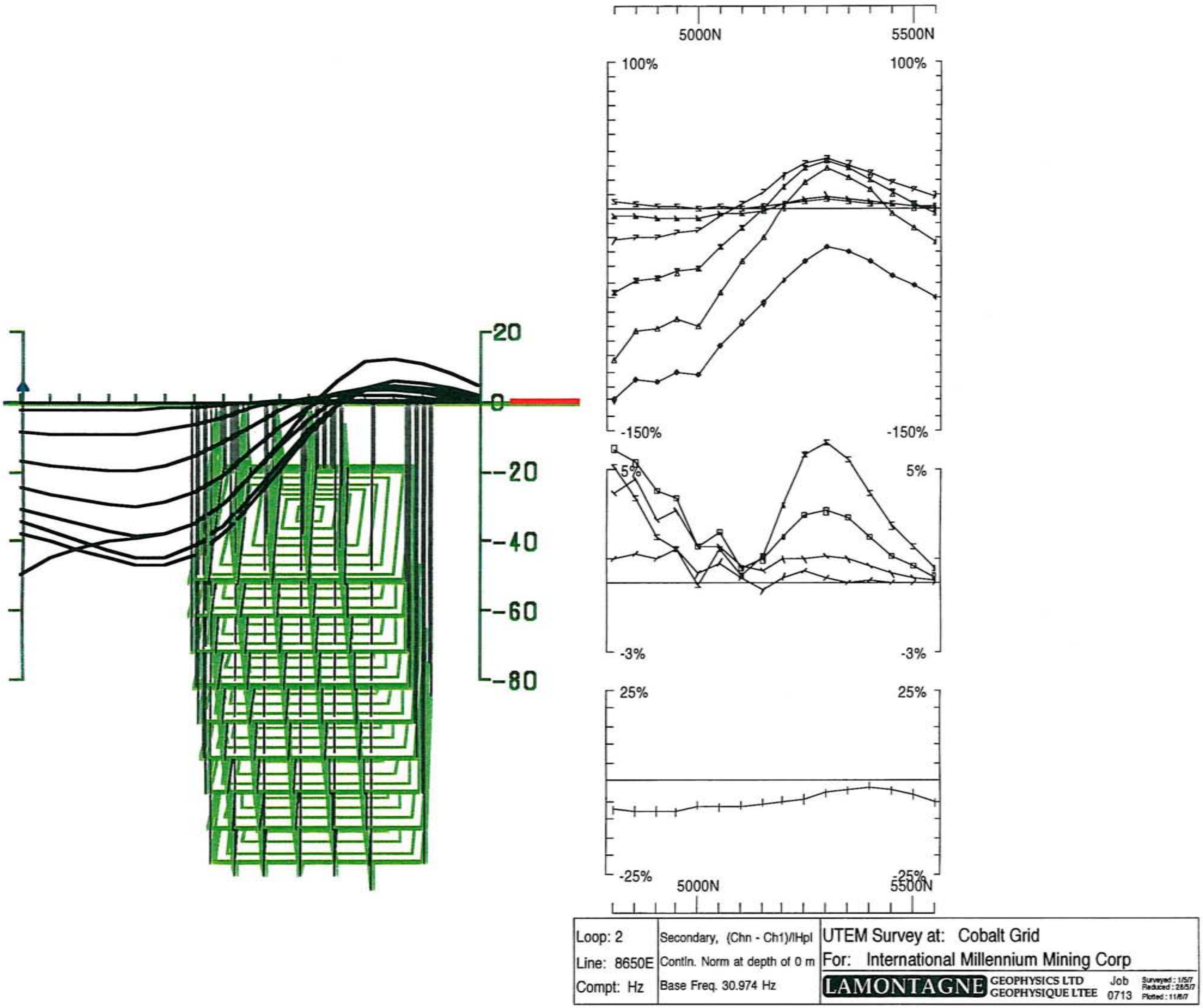


Figure 11: Multiloop Data and Field Data for line 8650E

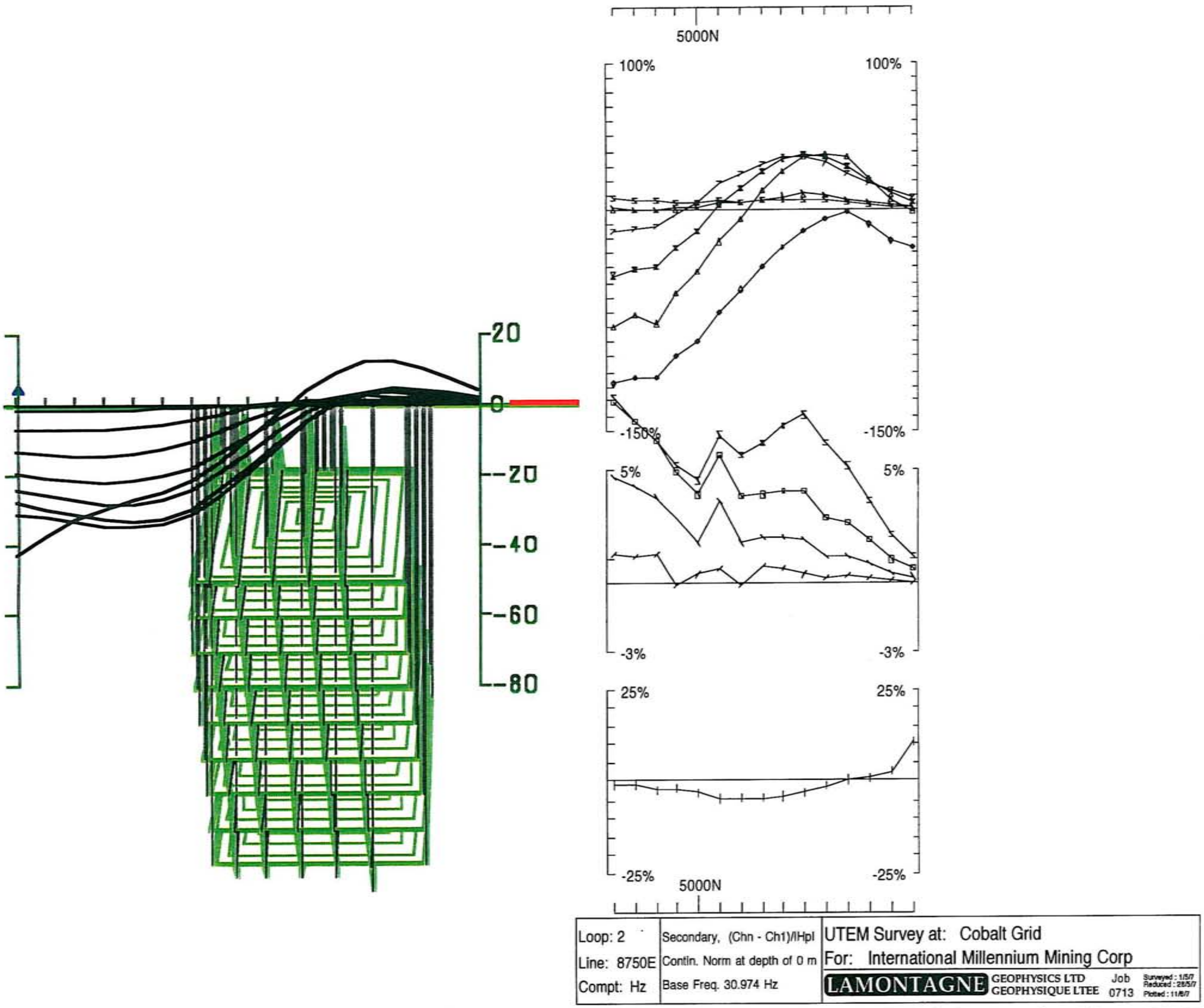


Figure 12: Multiloop Data and Field Data for line 8750E

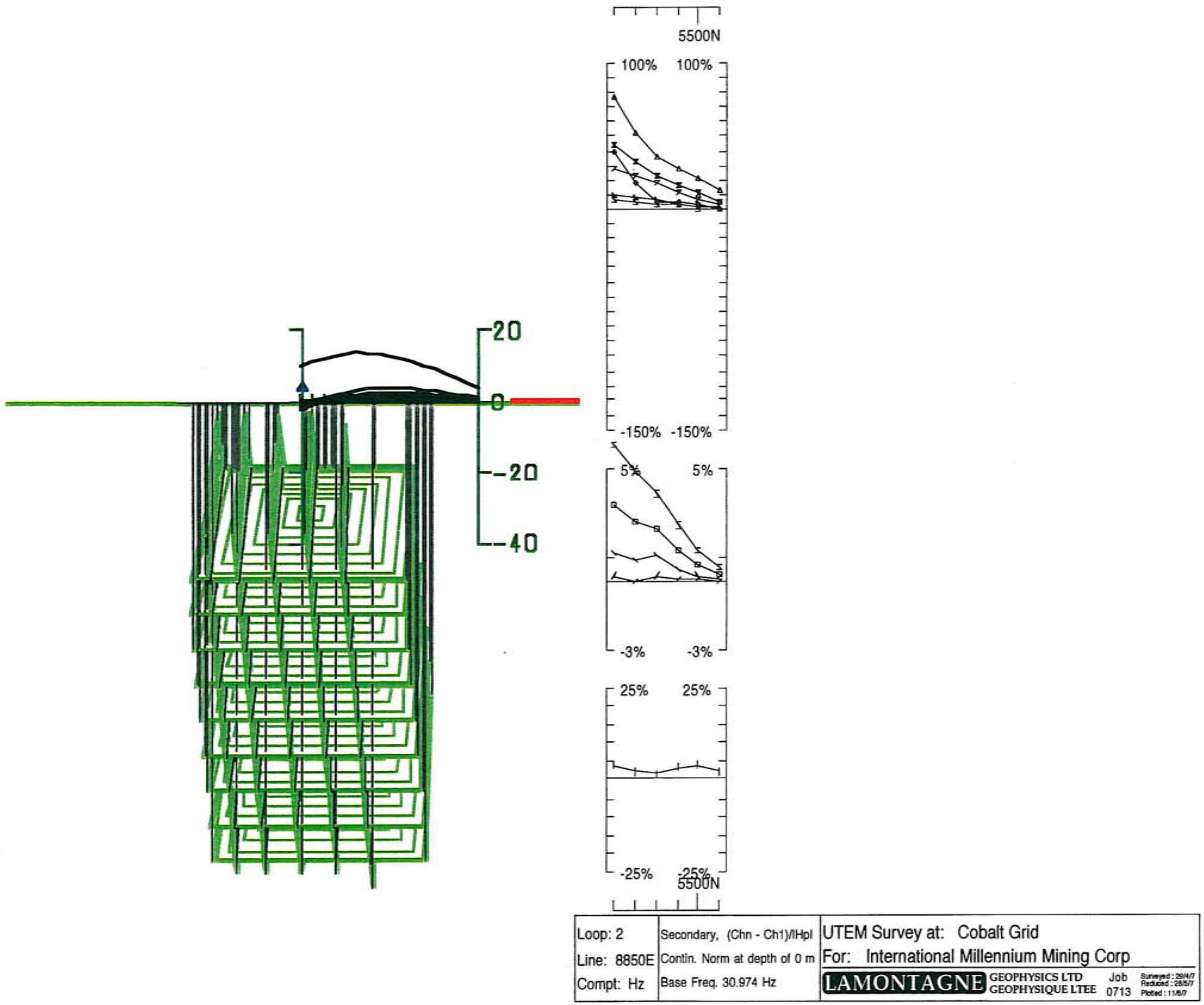


Figure 13: Multiloop Data and Field Data for line 8850E

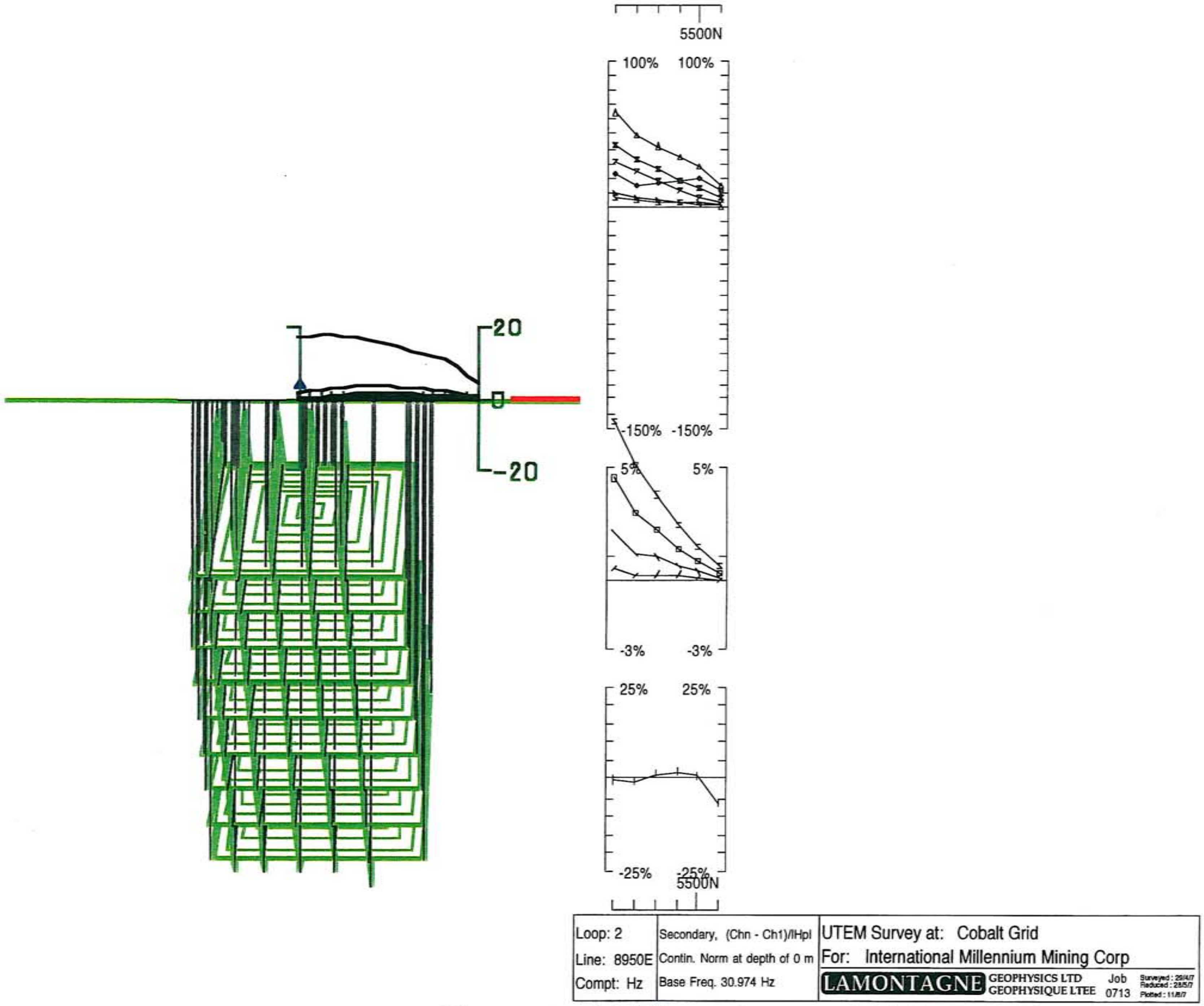
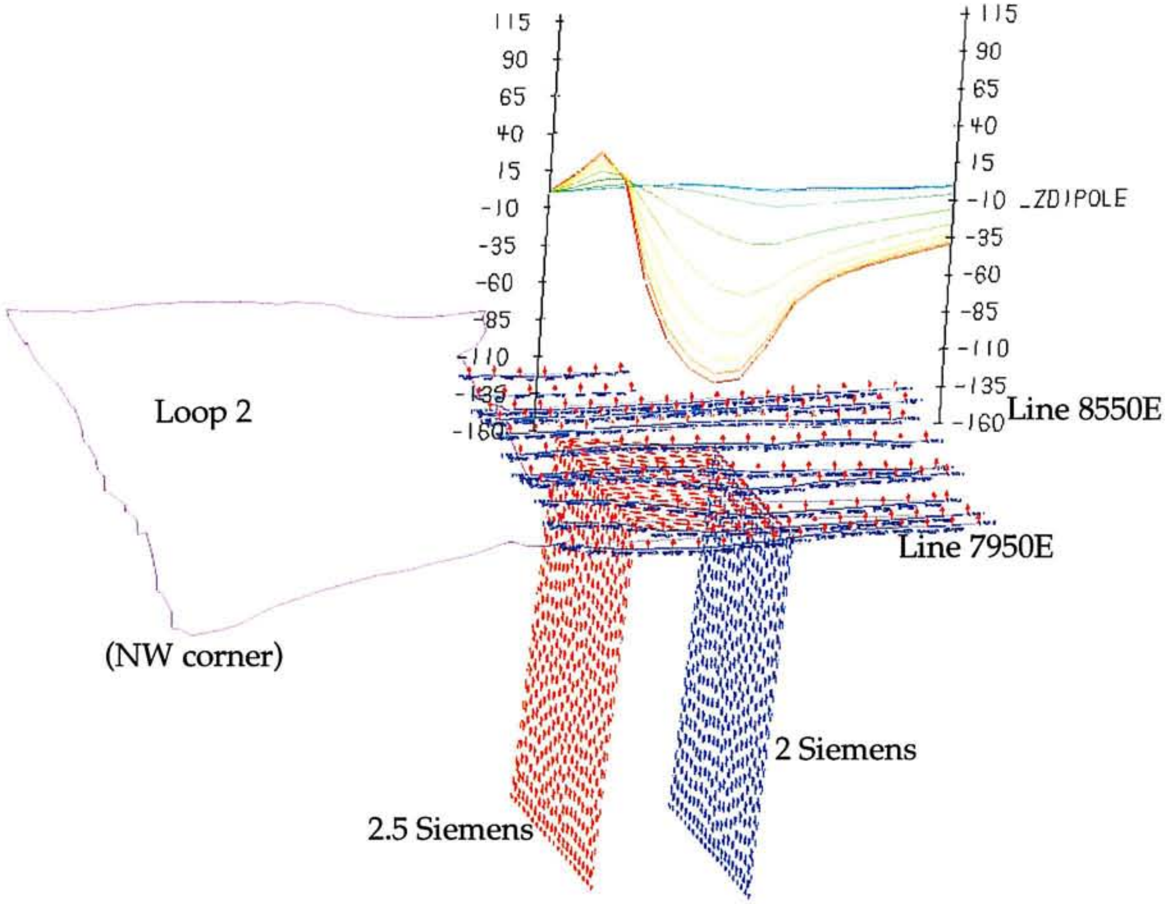


Figure 14: Multiloop Data and Field Data for line 8950E



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International Millennium Mining Corp

Slab Model Response for Line 8550E

Multiloop 3 Section

Figure 15

Appendix A

0713 UTEM Profiles

UTEM 3 Survey

Cobalt Area Project
Cobalt, Ontario

2007

for

International Millennium Mining Corp

SURVEY RESULTS

Presentation

The results of the survey are summarized and presented as UTEM profiles in Appendix A. Profiles are presented by transmitter loop in order (blue separator). The final grids and loop locations are presented in Figure 1. The survey went well and overall the data quality is quite good. A description of the standard plotting formats used and of the UTEM System is presented in Appendix C.

The surface profiles are listed by Loop number and presented as 3-axis profiles in the following order:

Hz continuous norm ***Ch1 reduced*** **(blue seperator)**

UTEM 3 Surface Survey

For each line surveyed the continuously normalized profiles for the vertical (Hz) component has been plotted.

Outline of surface profile types

Continuous normalization is useful for detection of the presence anomalies at any position on a profile. The anomaly shape is distorted by the normalization to the local field. As the field gets very big near the wire, the continuously normalized Ch1 tends towards zero.

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1

List of Data Collected and Plotted

Cobalt Project 2007 Surface coverage - @ 30.974 Hertz

	Line		Coverage	
Loop 1	Line	7600E	6700N - 7300N	600m
	Line	7700E	6450N - 7250N	800m
	Line	7800E	6425N - 7450N	1025m
	Line	7900E	6450N - 7500N	1050m
	Line	8000E	6450N - 7500N	1050m
	Line	8100E	6450N - 7050N	600m
			7350N - 7700N	350m
	Line	8200E	6450N - 7050N	600m
			7350N - 7700N	350m
	Line	8300E	6450N - 7050N	550m
			7350N - 7550N	200m
	Line	8440E	6450N - 7550N	1100m
	Line	8500E	6450N - 7700N	1250m
	Line	8600E	6450N - 7700N	1250m
	Line	8700E	6450N - 7700N	1250m
	Line	8800E	6450N - 7700N	1250m
	Line	8900E	6450N - 7650N	1200m
	Line	9000E	6450N - 7700N	1250m
	Line	9100E	6450N - 7700N	1250m
	Line	9200E	6450N - 7700N	1250m
	Line	9300E	6450N - 7675N	1225m
			Loop 1 Total	**19450m**
Loop 2	Line	7950E	4800N - 5550N	750m
	Line	8050E	4800N - 5550N	750m
	Line	8150E	4825N - 5550N	725m
	Line	8250E	4800N - 5550N	750m
	Line	8350E	4800N - 5550N	750m
	Line	8450E	4800N - 5550N	750m
	Line	8550E	4825N - 5550N	725m
	Line	8650E	4800N - 5550N	750m
	Line	8750E	4800N - 5550N	750m
	Line	8850E	5300N - 5550N	250m
	Line	8950E	5300N - 5550N	250m
			Loop 2 Total	**7200m**
			Cobalt 2007 Total	**26.650 km**

COBALT AREA PROJECT

Cobalt, Ontario

Loop 1

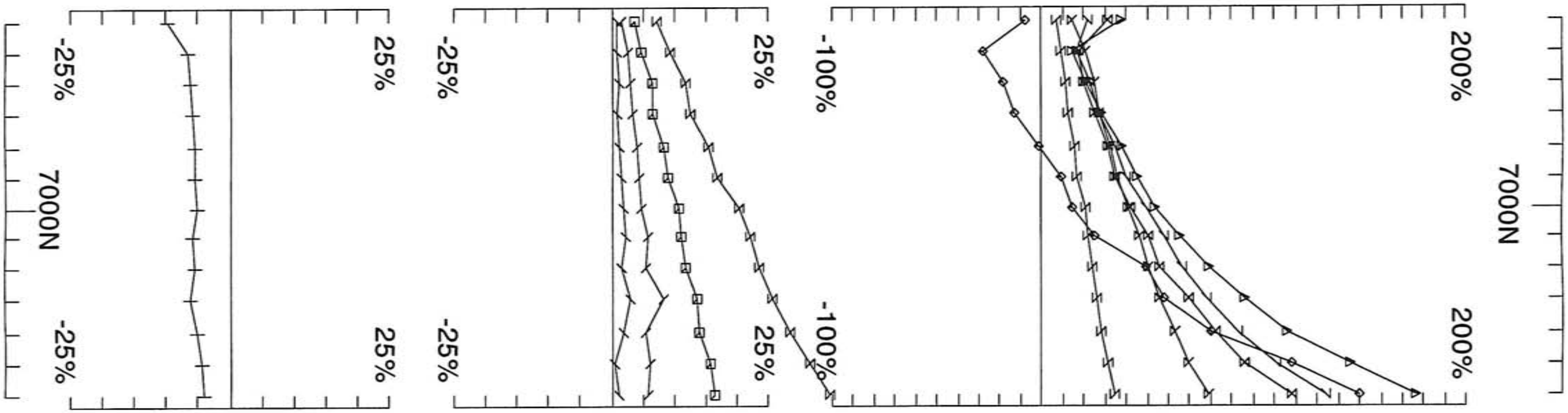
Hz
@ 30.974 Hz frequency

continuous norm

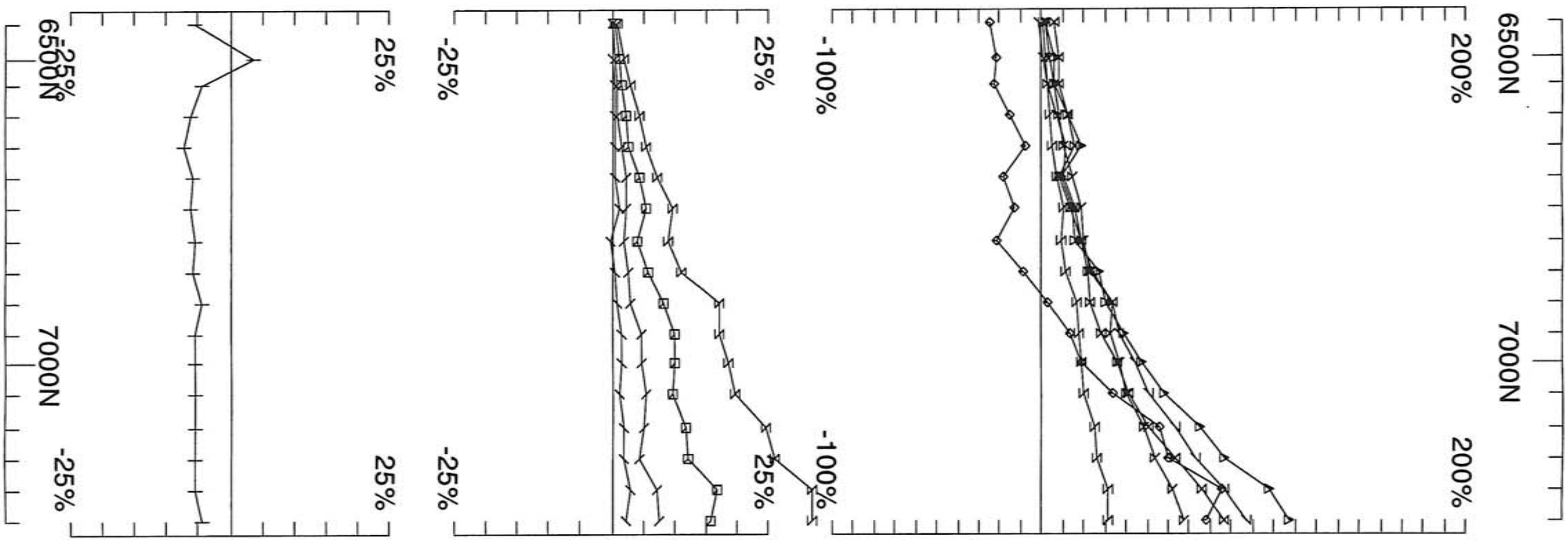
Ch 1 reduced

Loop 1	Line 7600E	6700N - 7300N	600m
	Line 7700E	6450N - 7250N	800m
	Line 7800E	6425N - 7450N	1025m
	Line 7900E	6450N - 7500N	1050m
	Line 8000E	6450N - 7500N	1050m
	Line 8100E	6450N - 7050N	600m
		7350N - 7700N	350m
	Line 8200E	6450N - 7050N	600m
		7350N - 7700N	350m
	Line 8300E	6450N - 7050N	550m
		7350N - 7550N	200m
	Line 8440E	6450N - 7550N	1100m
	Line 8500E	6450N - 7700N	1250m
	Line 8600E	6450N - 7700N	1250m
	Line 8700E	6450N - 7700N	1250m
	Line 8800E	6450N - 7700N	1250m
	Line 8900E	6450N - 7650N	1200m
	Line 9000E	6450N - 7700N	1250m
	Line 9100E	6450N - 7700N	1250m
	Line 9200E	6450N - 7700N	1250m
	Line 9300E	6450N - 7675N	1225m
		Loop 1 Total	19450m

Loop 1 - continuous norm



Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 7600E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 28/4/7 Reduced : 12/5/7 Plotted : 12/6/7



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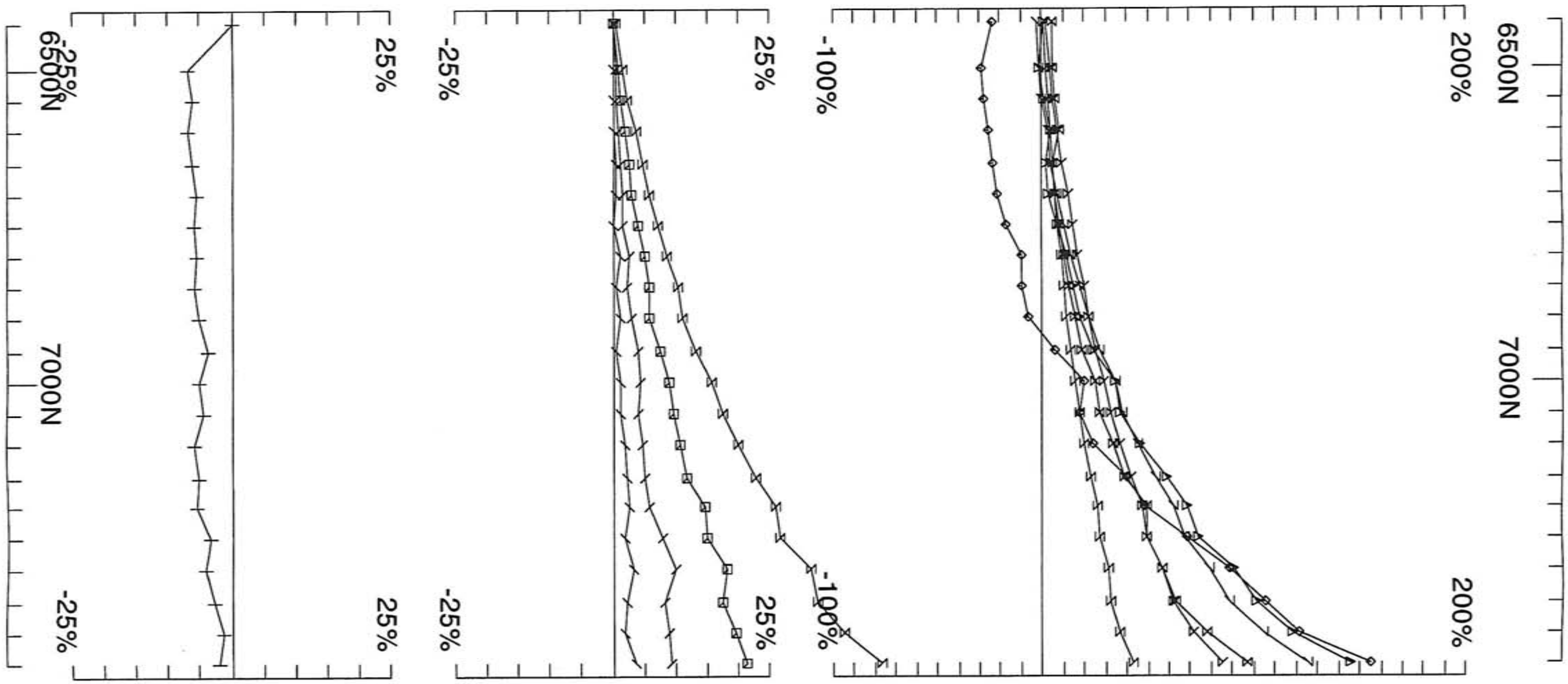
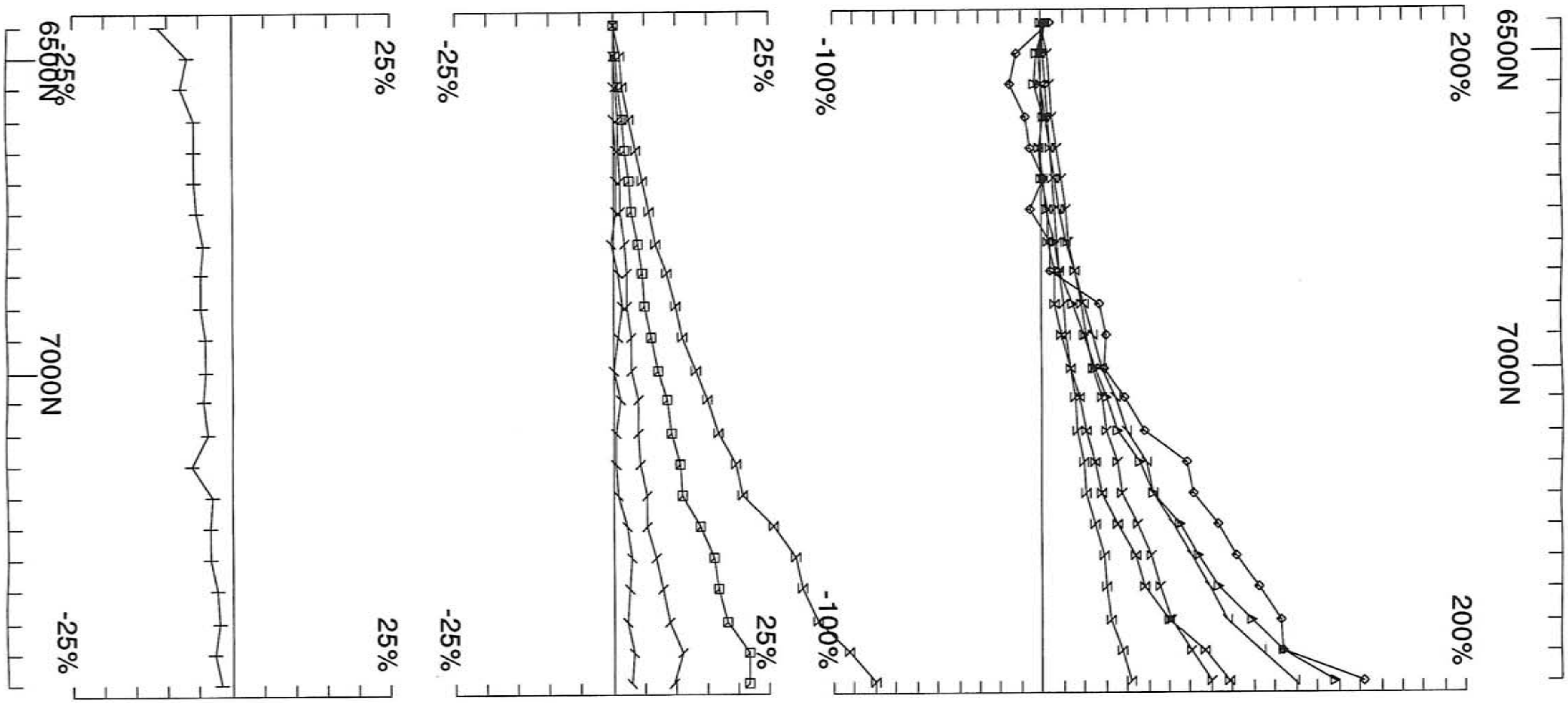
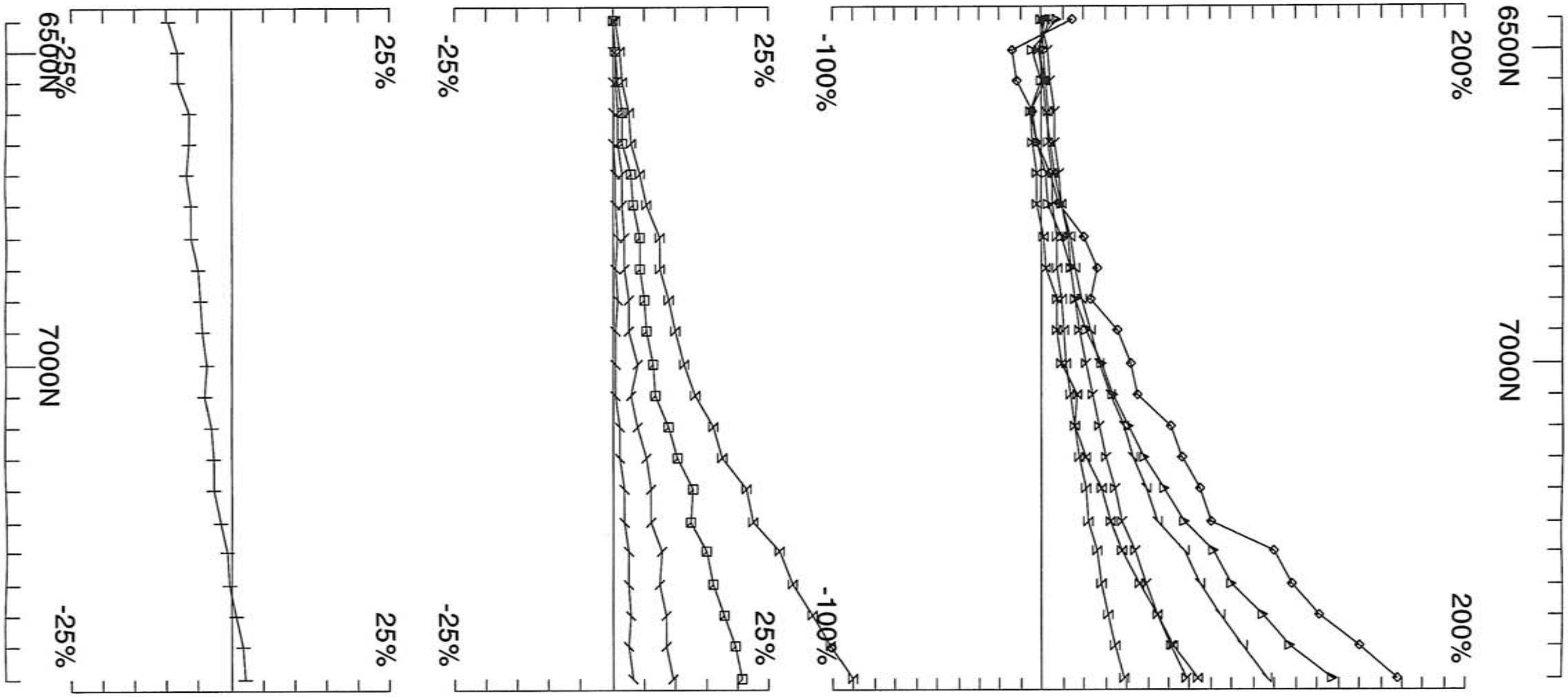
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 28/4/7 Reduced : 11/5/7 Plotted : 12/6/7



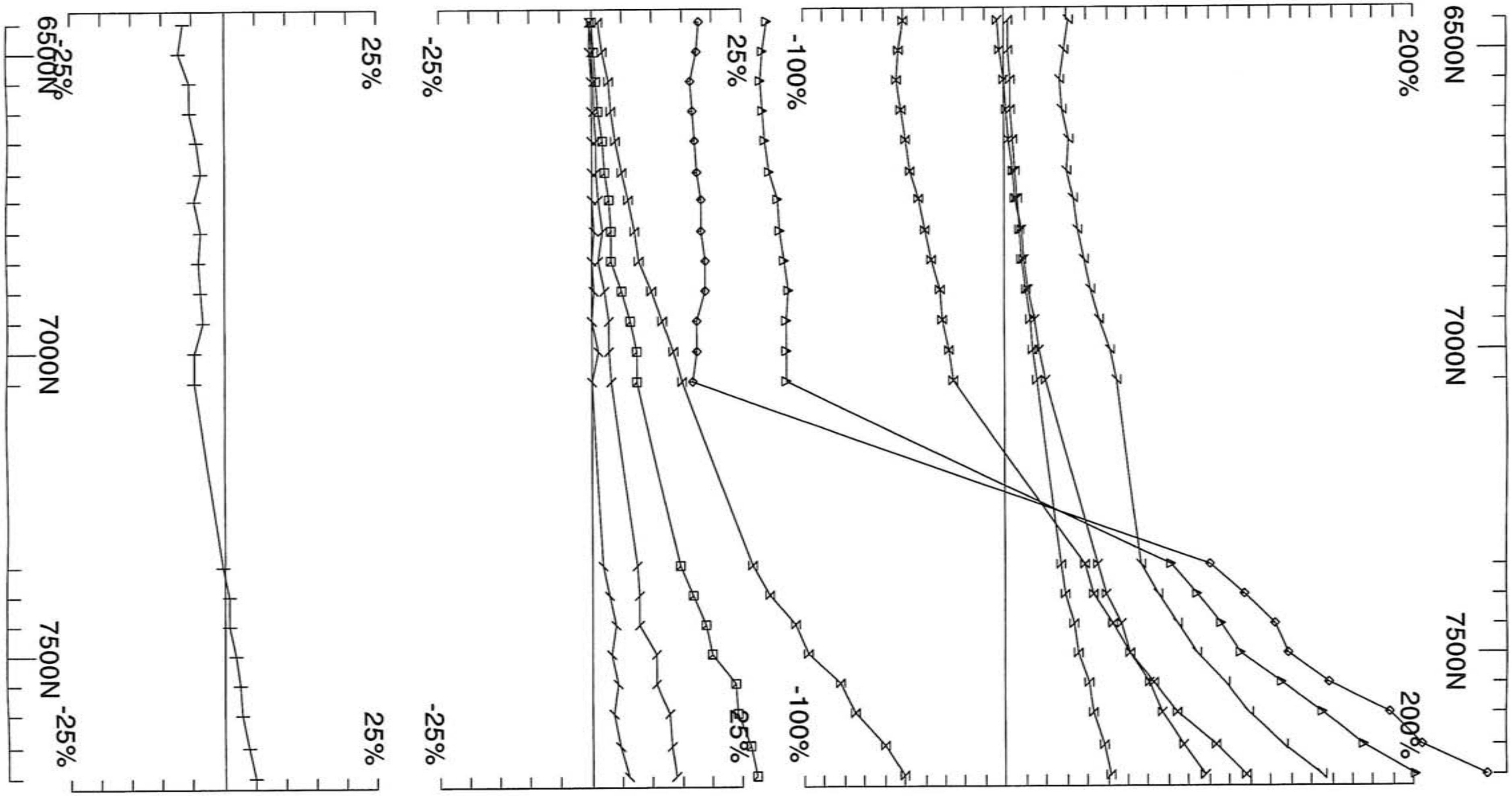
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 7800E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 28/4/7 Reduced : 12/5/7 Plotted : 12/6/7



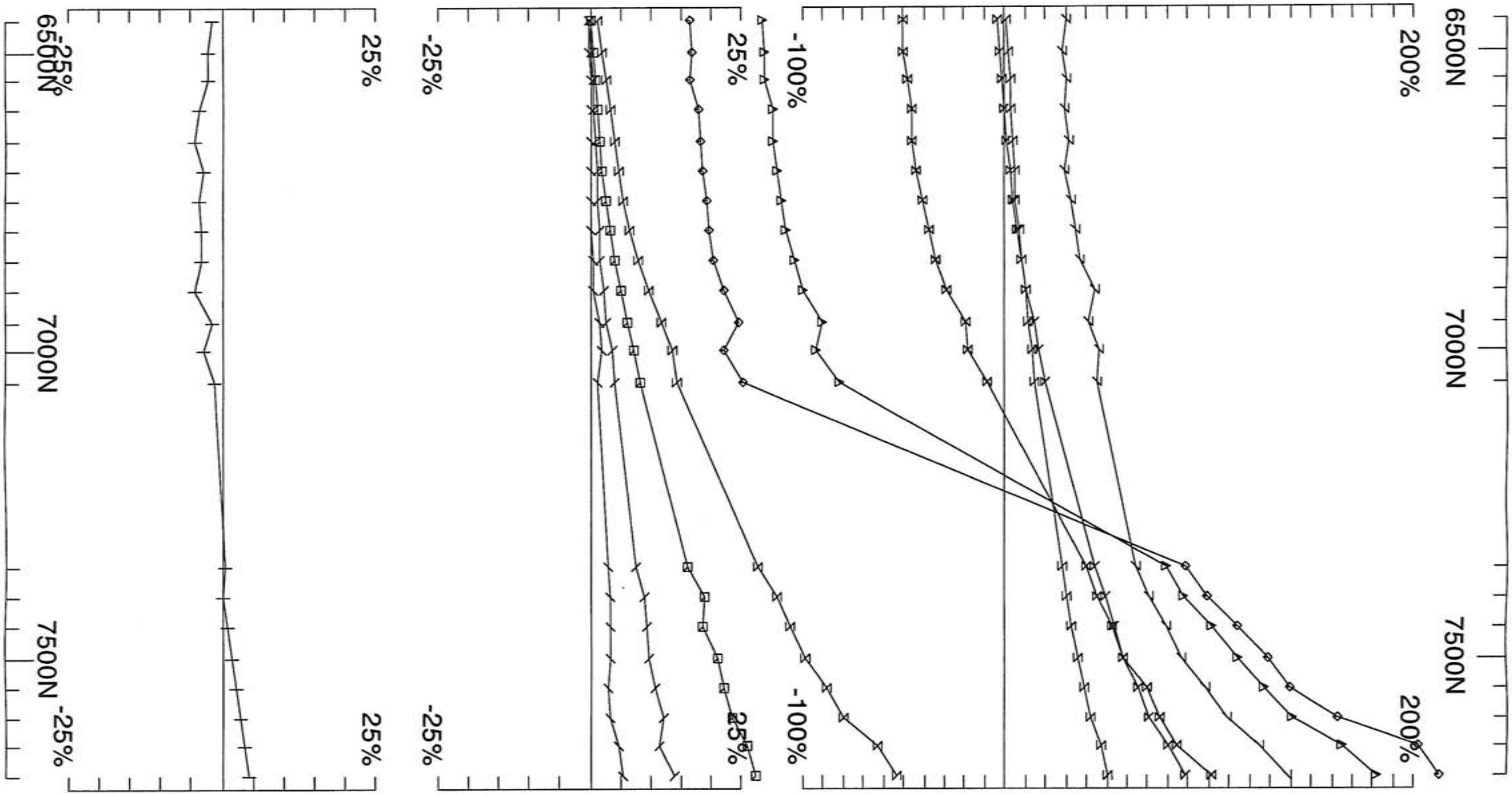
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 7900E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 28/4/7 Reduced : 12/5/7 Plotted : 12/6/7



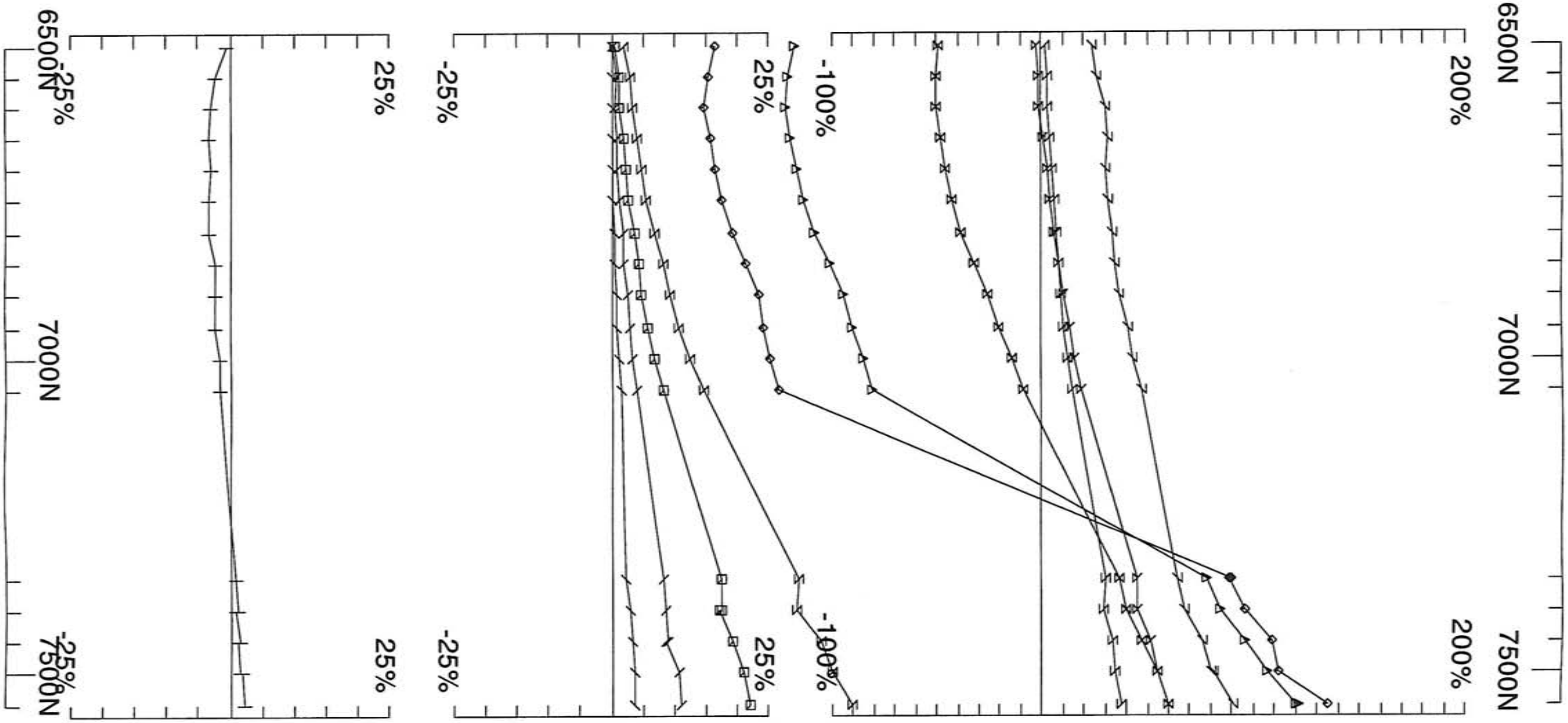
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8000E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 27/4/7 Reduced : 12/5/7 Plotted : 12/6/7



Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8100E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 27/4/7 Reduced : 27/4/7 Plotted : 12/6/7



Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8200E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 27/4/7 Reduced : 27/4/7 Plotted : 12/6/7



Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8300E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
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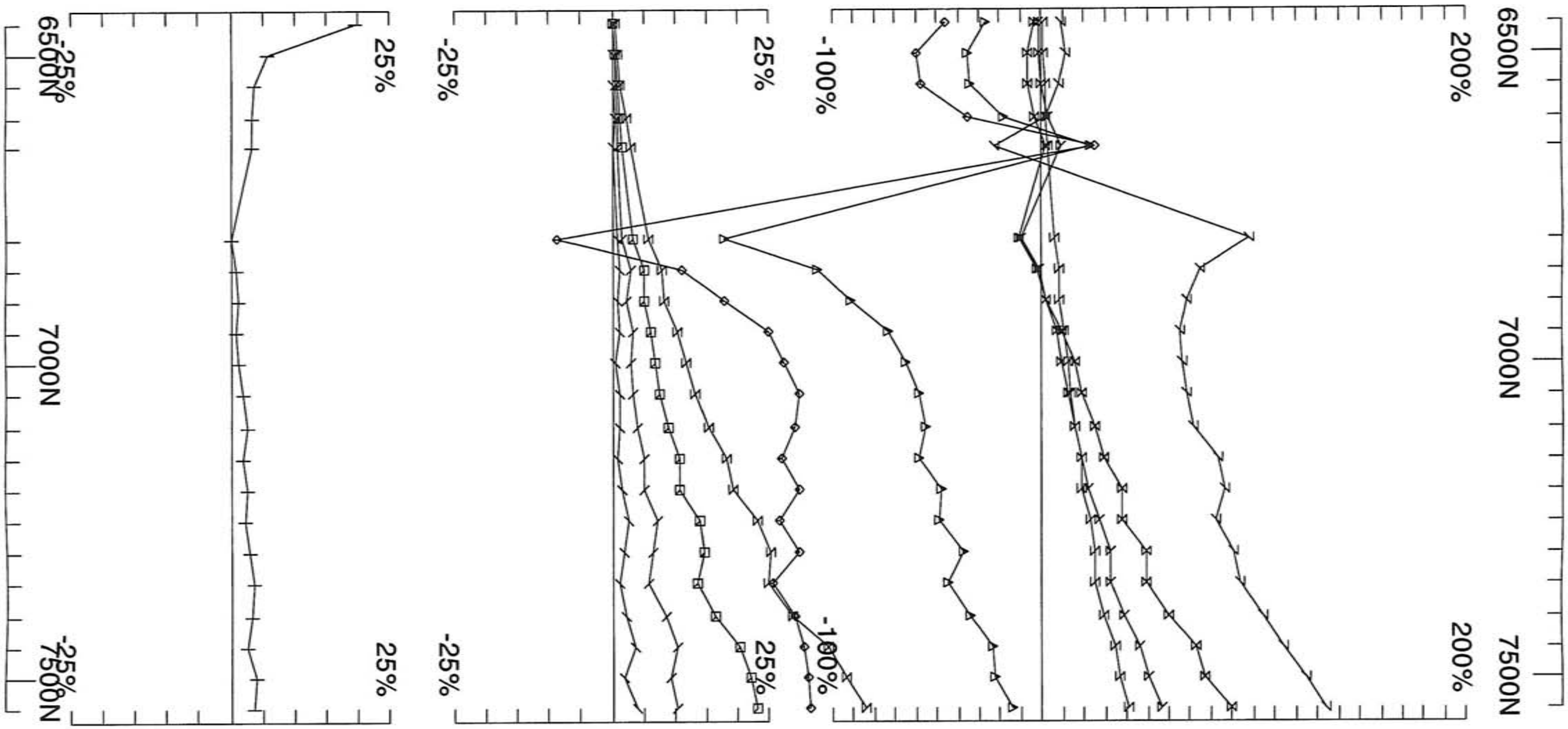

Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8440E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
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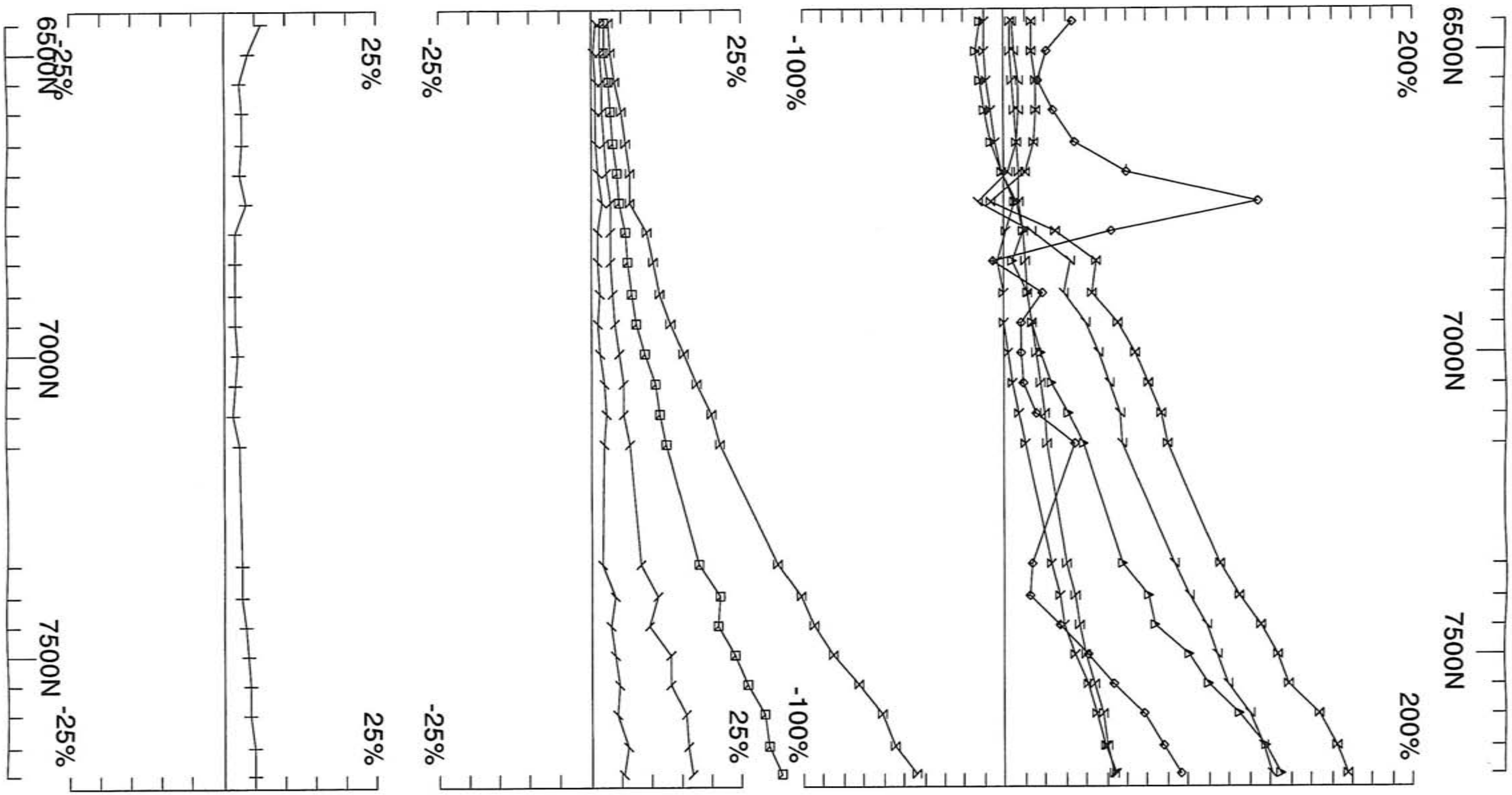
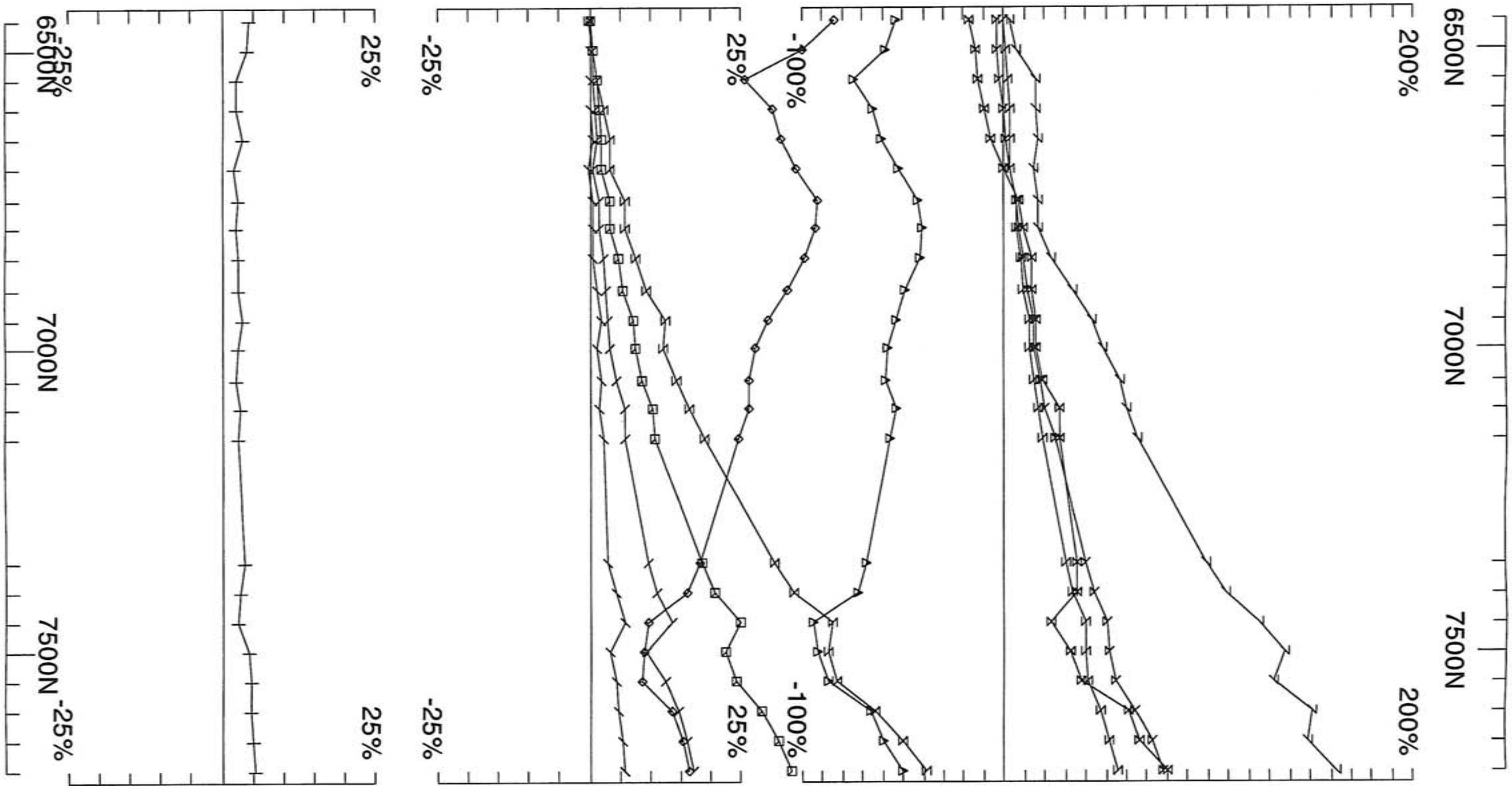
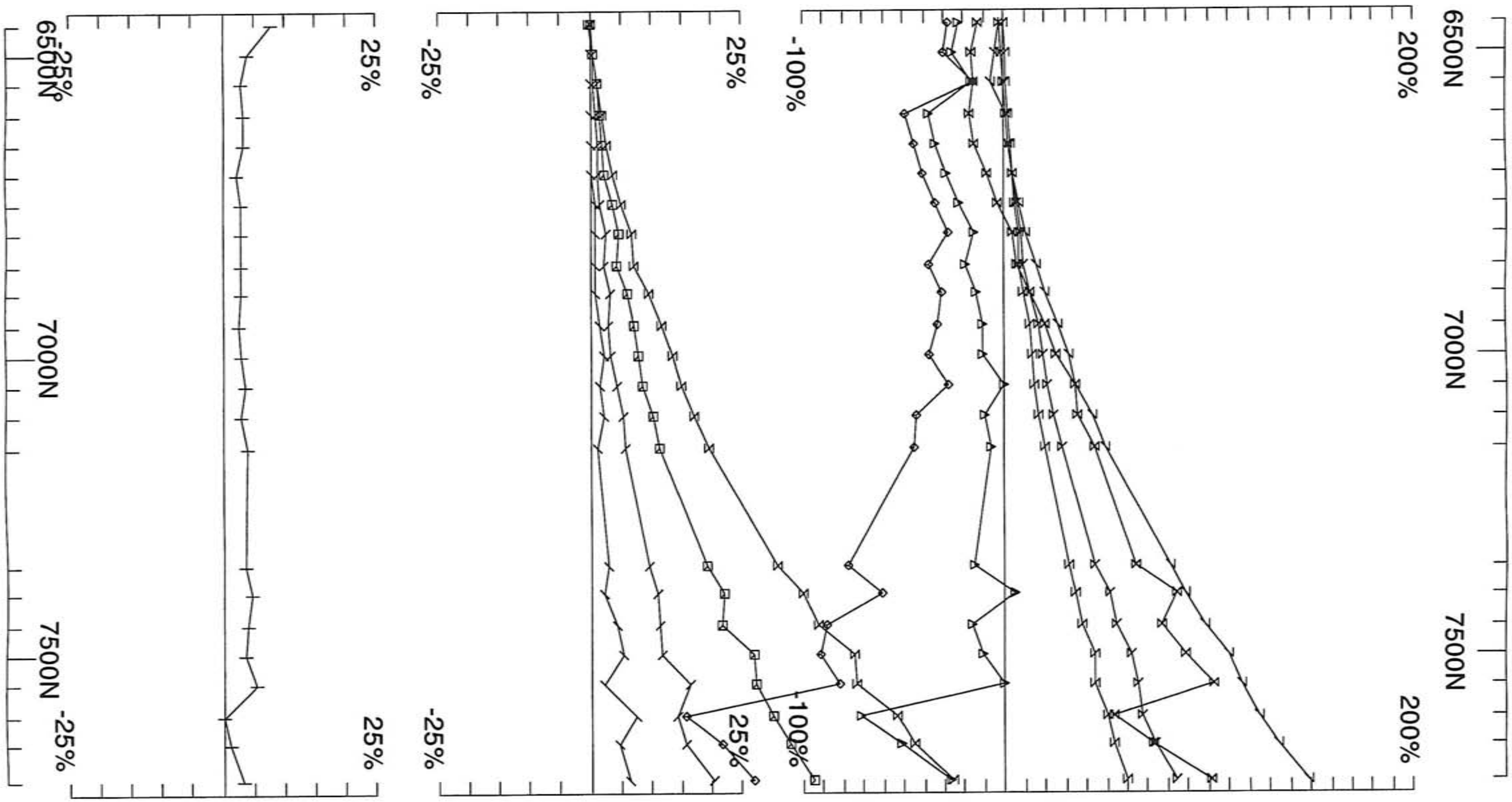


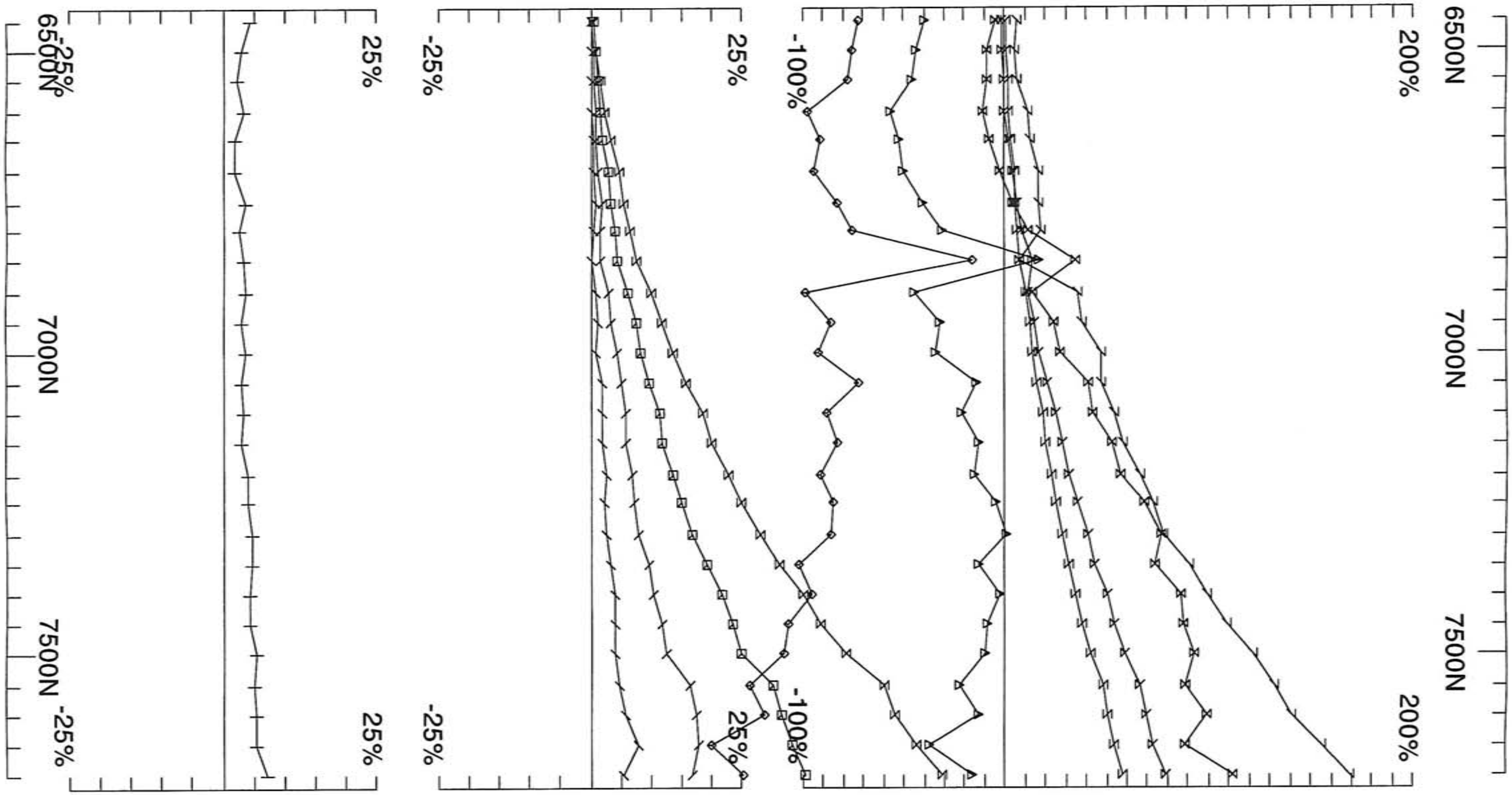
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8500E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 22/4/7 Reduced : 22/5/7 Plotted : 12/6/7



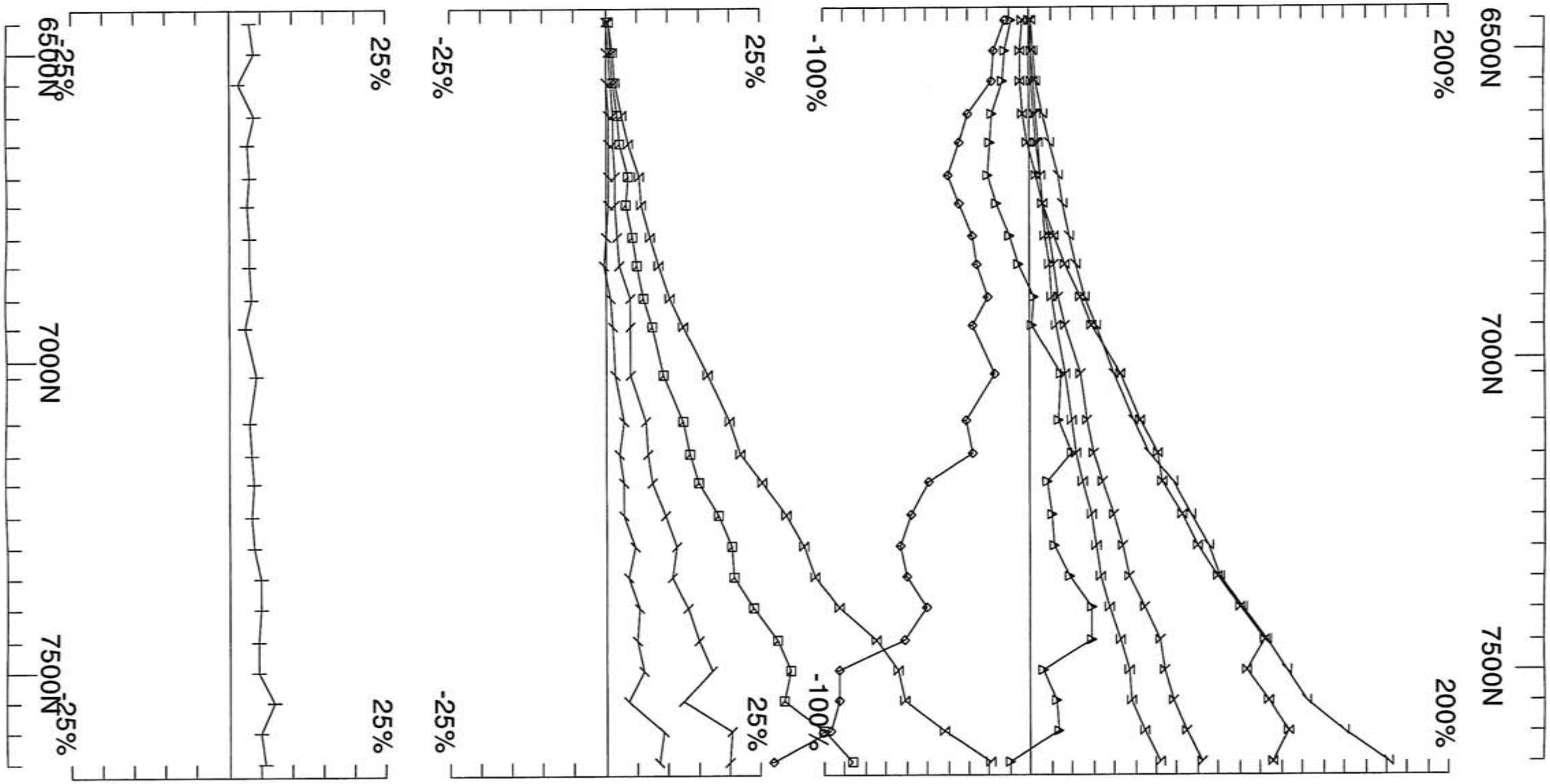
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8600E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 21/4/7 Reduced : 12/5/7 Plotted : 12/6/7



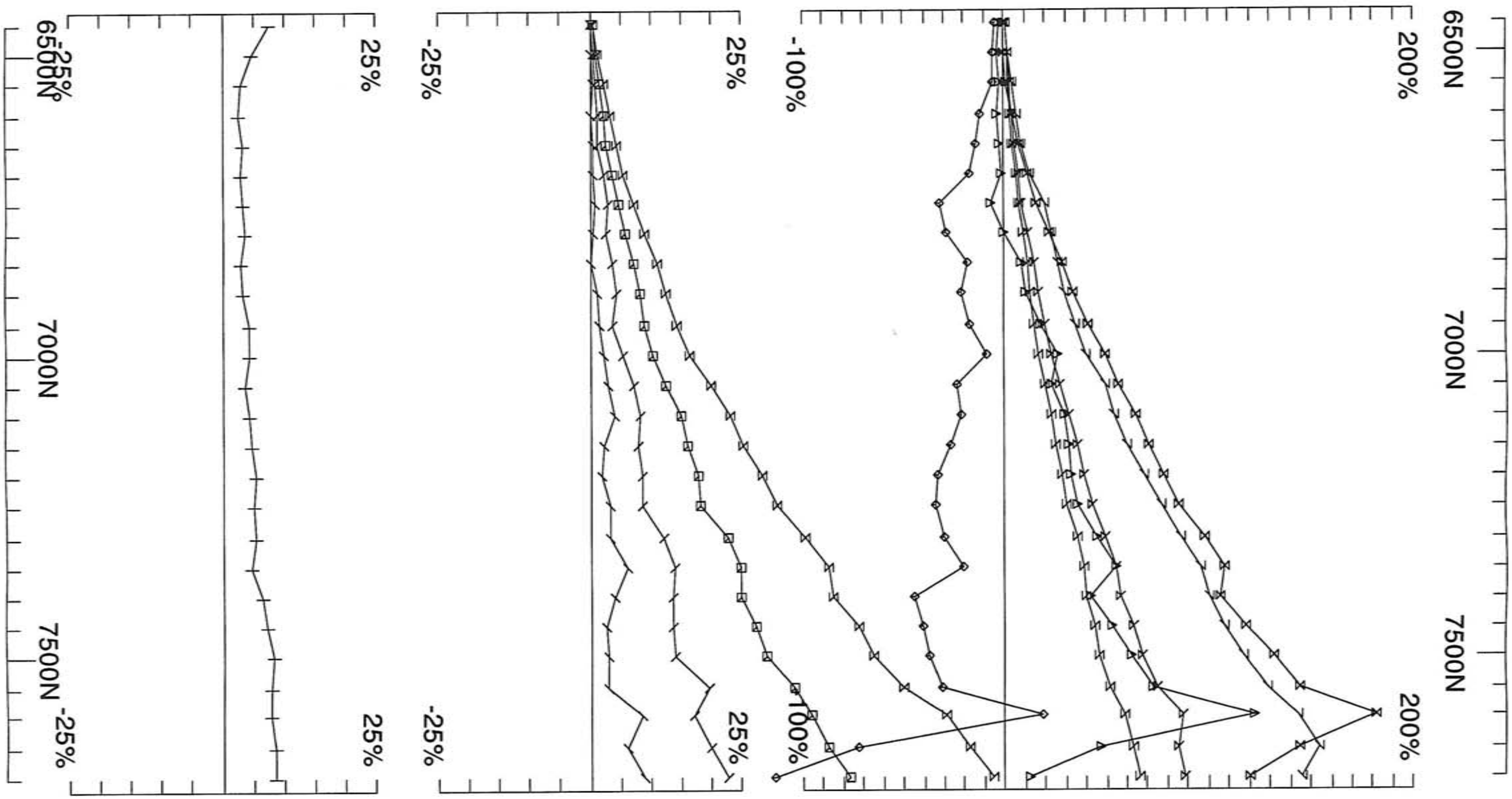
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8700E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 26/4/7 Reduced : 12/5/7 Plotted : 12/6/7



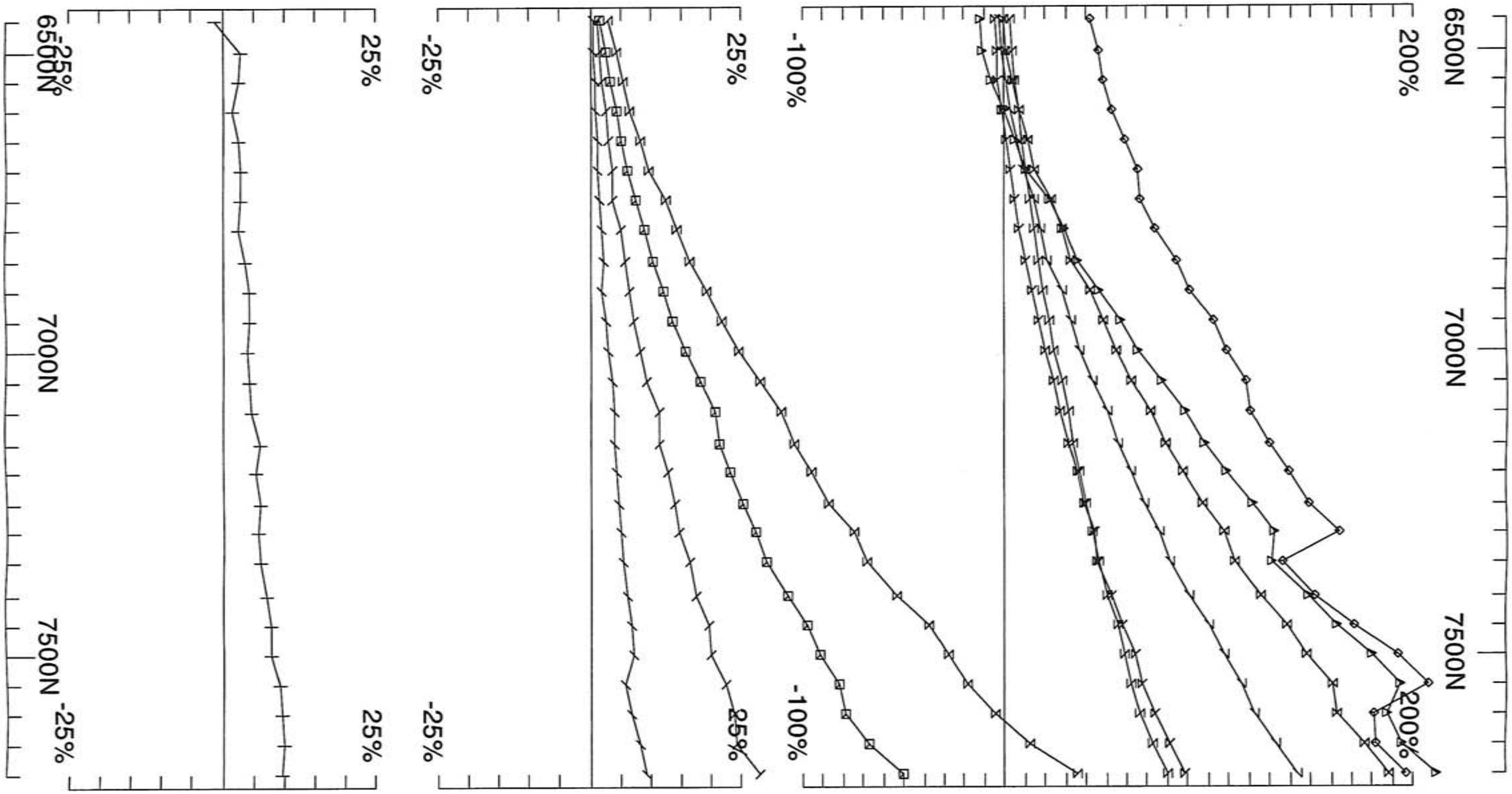
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8800E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 21/4/7 Reduced : 12/5/7 Plotted : 12/6/7



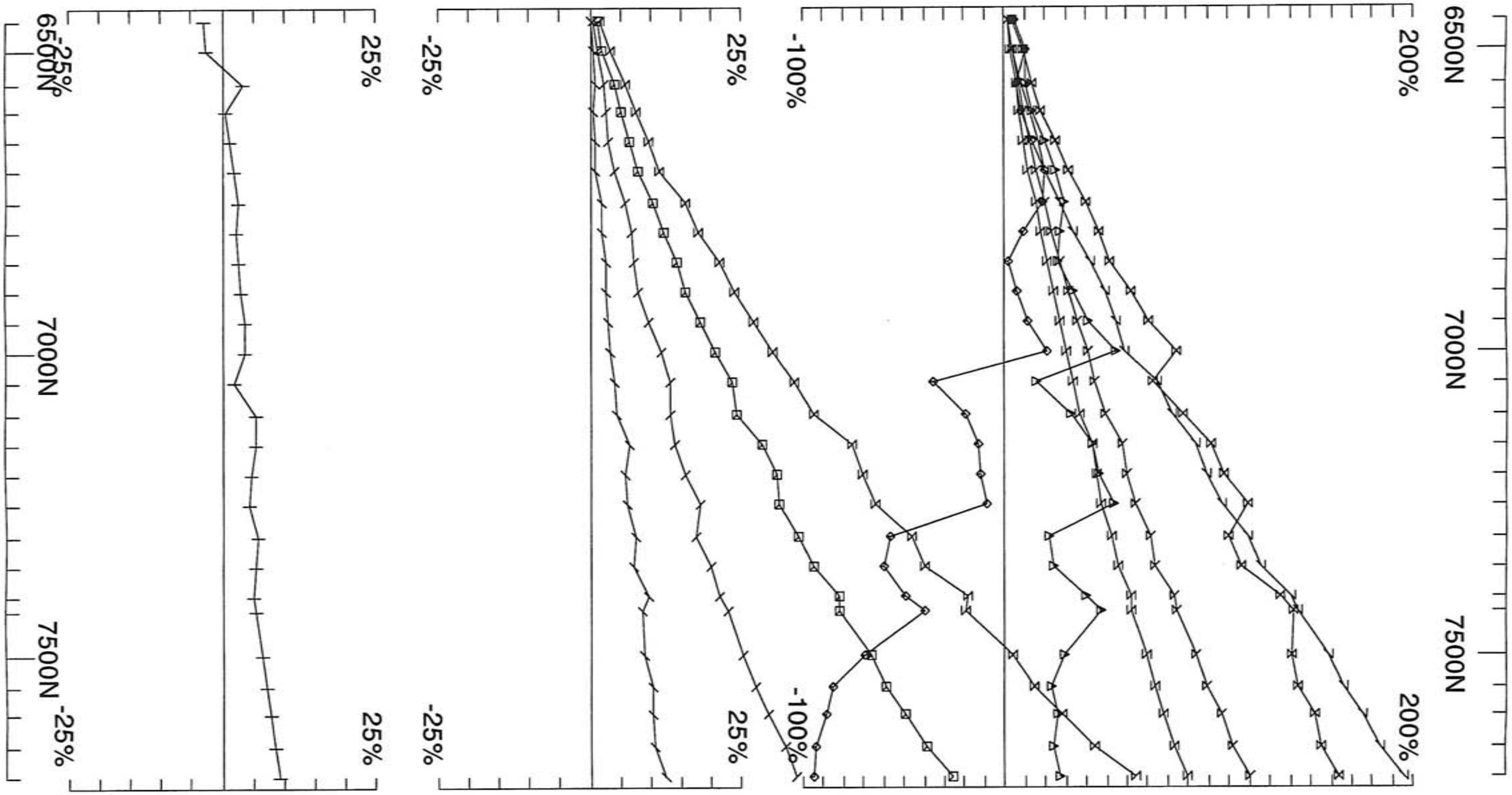
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8900E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 21/4/7 Reduced : 12/5/7 Plotted : 12/6/7



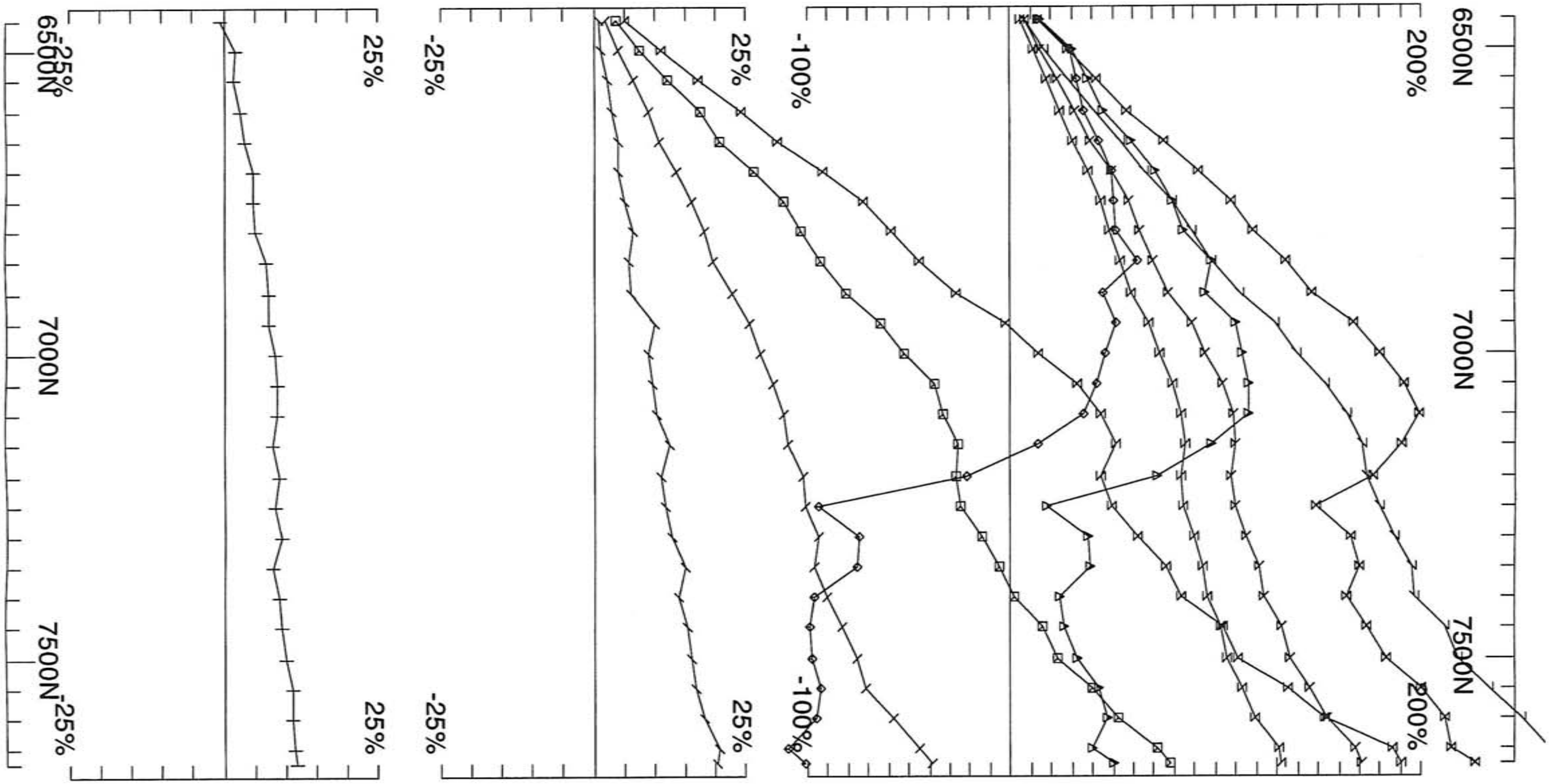
Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 9000E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 20/4/7 Reduced : 11/5/7 Plotted : 12/6/7



Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 9100E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 20/4/7 Reduced : 12/5/7 Plotted : 12/6/7



Loop: 1	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 9200E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 25/4/7 Reduced : 11/5/7 Plotted : 12/6/7



Loop: 1 Line: 9300E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Contin. Norm at depth of 0 m Base Freq. 30.974 Hz	UTEM Survey at: Cobalt Grid For: International Millennium Mining Corp LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 25/4/7 Reduced : 12/5/7 Plotted : 12/6/7

Loop 2

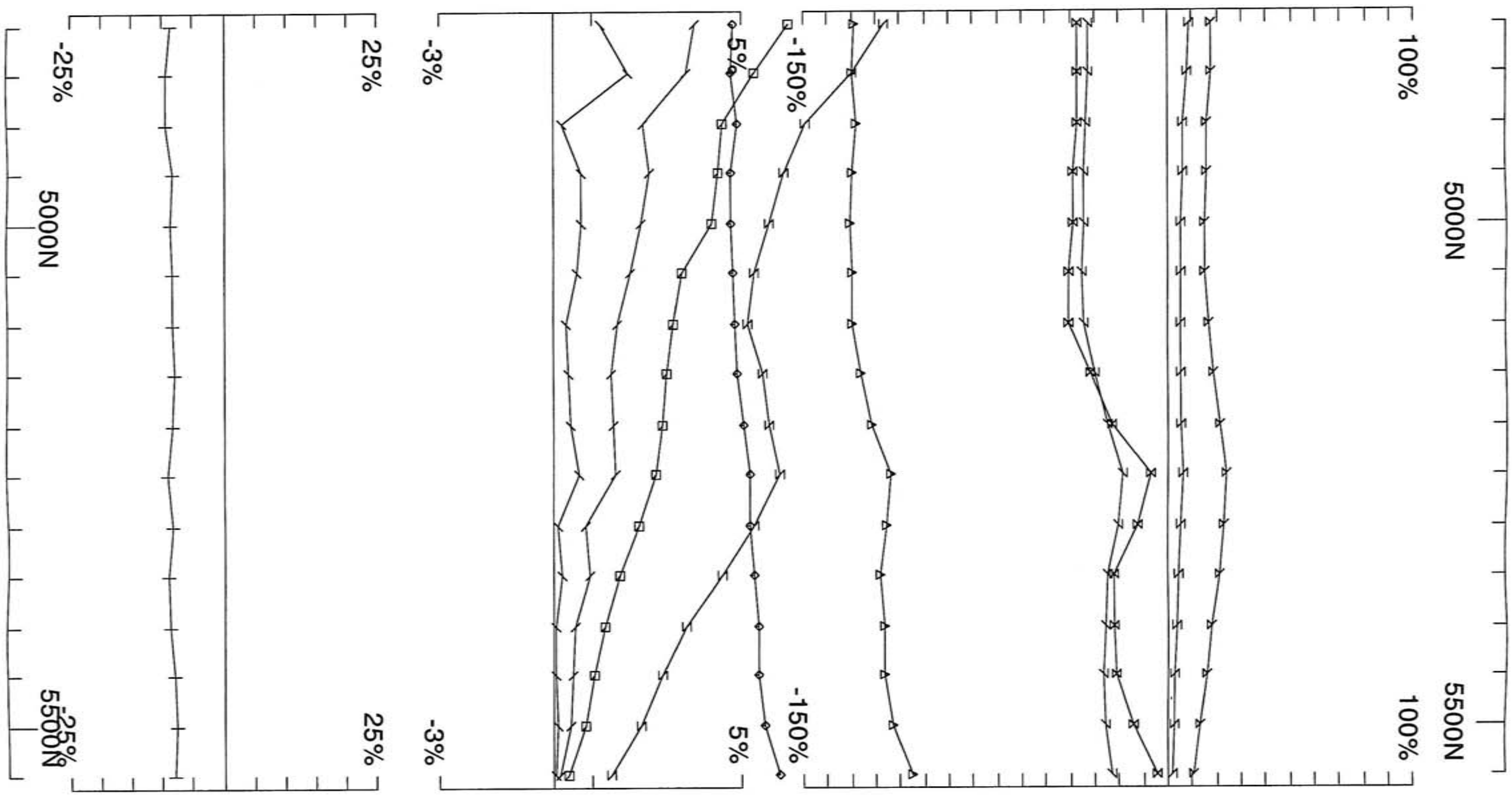
Hz
@ 30.974 Hz frequency

continuous norm

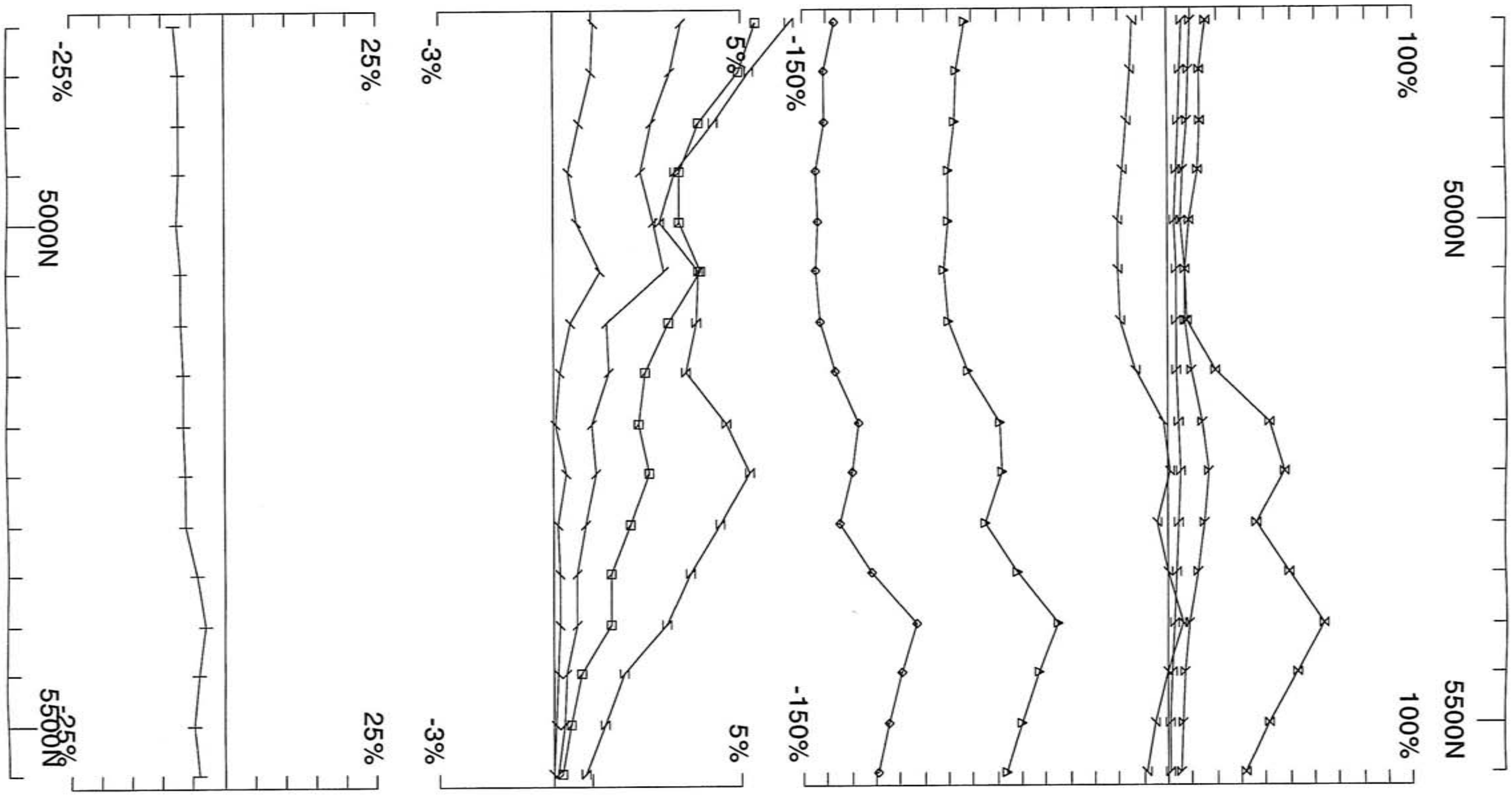
Ch 1 reduced

Loop 2	Line 7950E	4800N - 5550N	750m
	Line 8050E	4800N - 5550N	750m
	Line 8150E	4825N - 5550N	725m
	Line 8250E	4800N - 5550N	750m
	Line 8350E	4800N - 5550N	750m
	Line 8450E	4800N - 5550N	750m
	Line 8550E	4825N - 5550N	725m
	Line 8650E	4800N - 5550N	750m
	Line 8750E	4800N - 5550N	750m
	Line 8850E	5300N - 5550N	250m
	Line 8950E	5300N - 5550N	250m
		Loop 2 Total	7200m

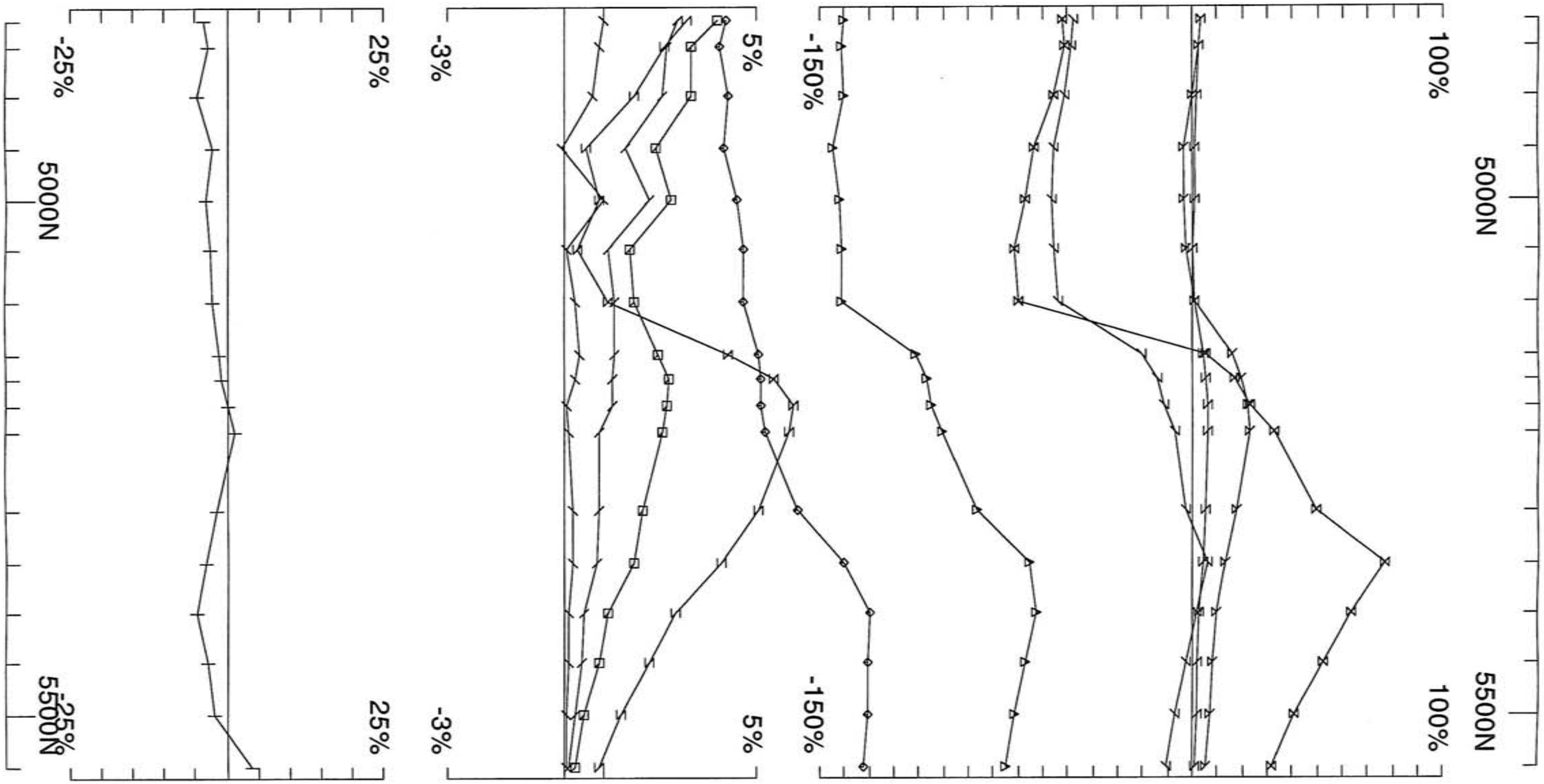
Loop 2 - continuous norm



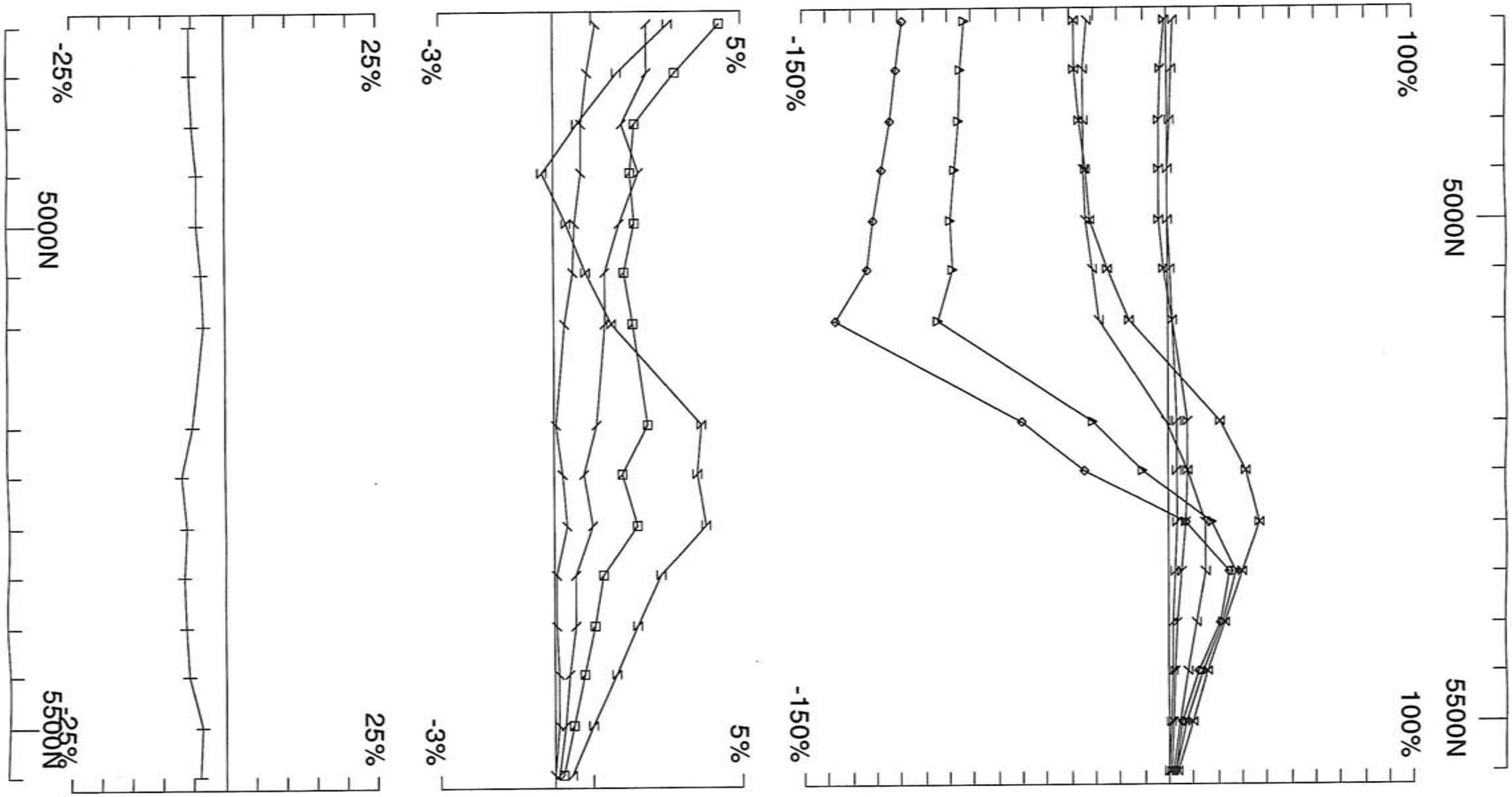
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 7950E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 30/4/7 Reduced : 28/5/7 Plotted : 12/6/7



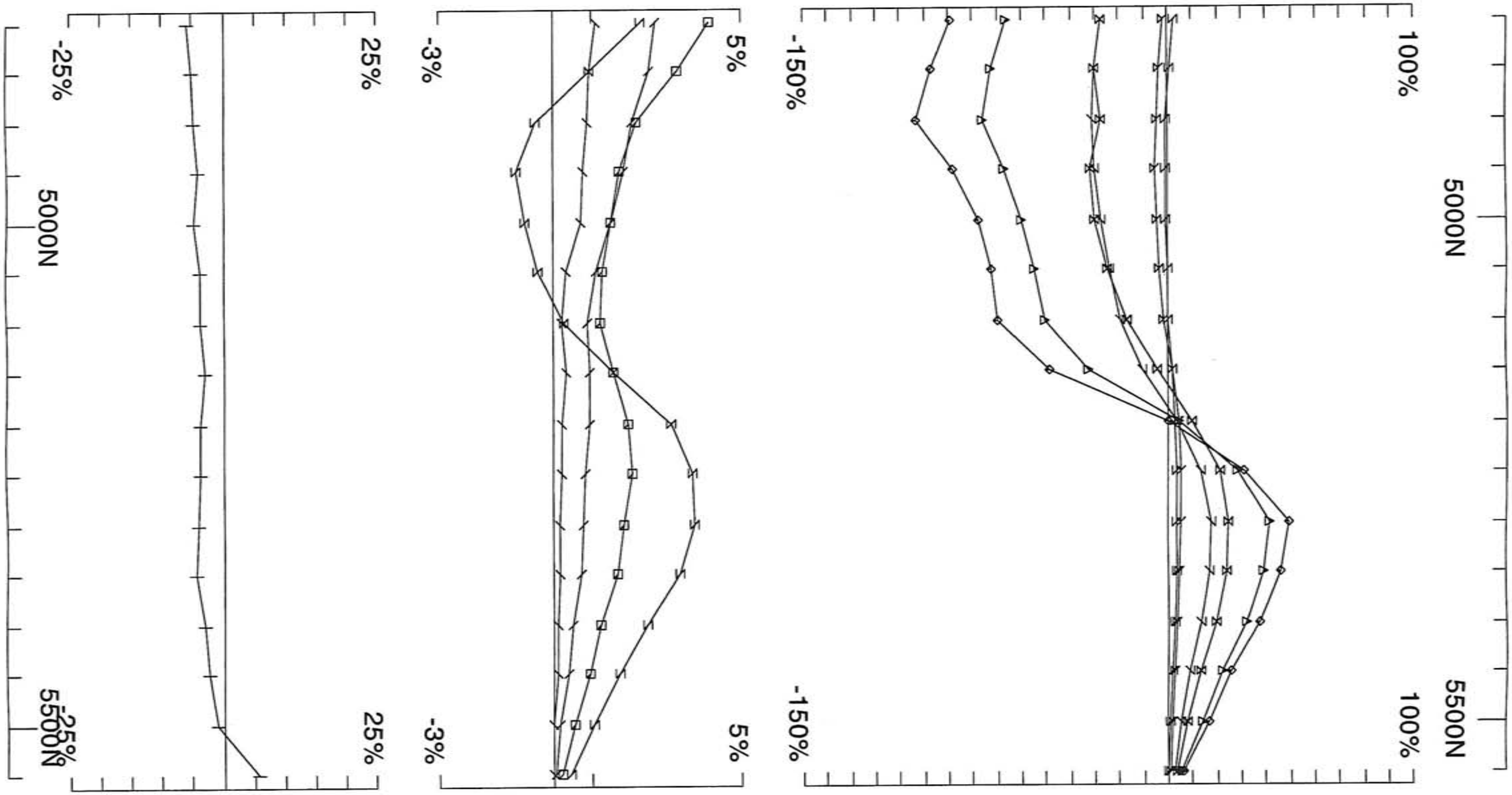
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8050E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 30/4/7 Reduced : 28/5/7 Plotted : 12/6/7



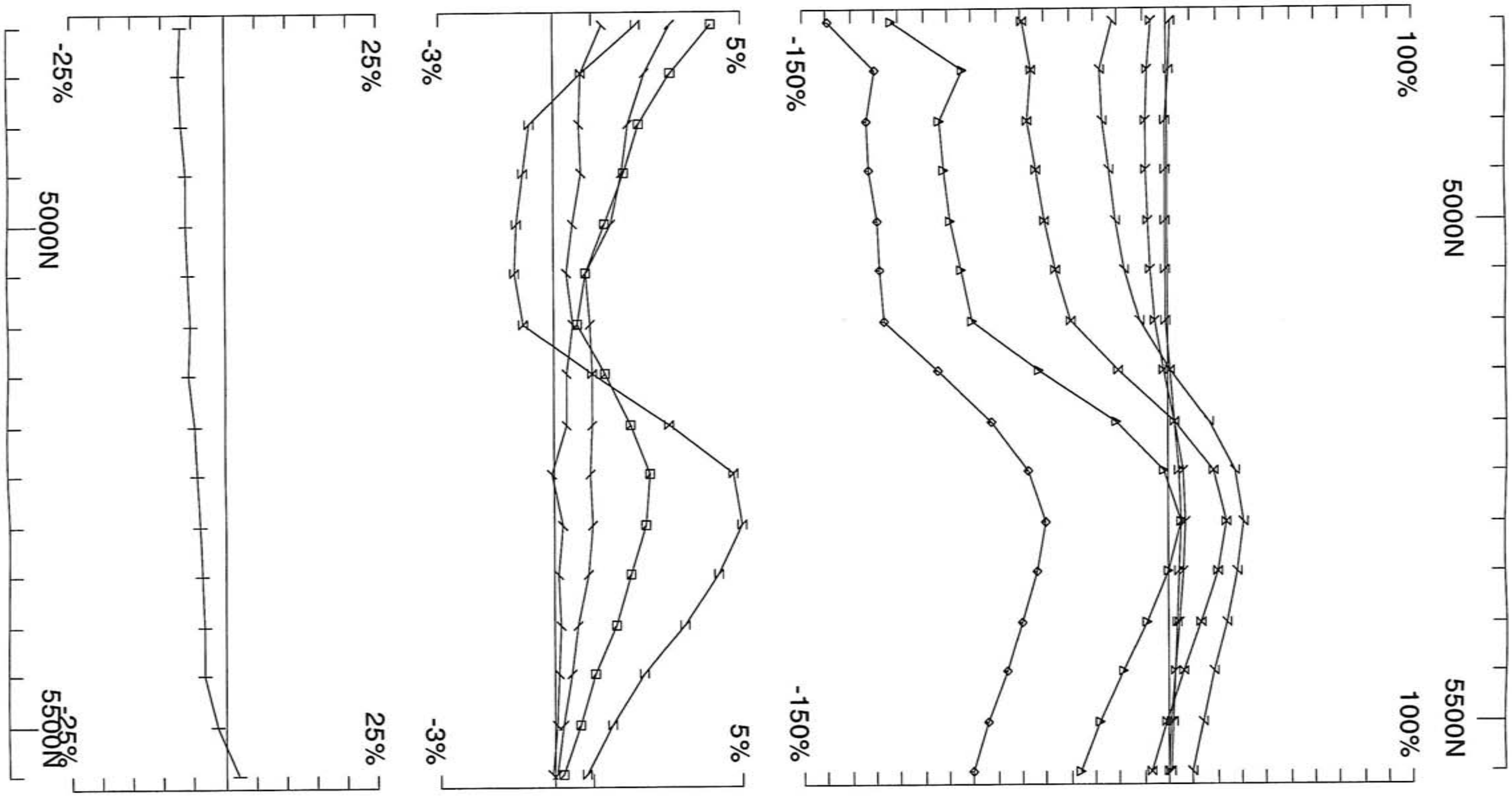
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8150E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 30/4/7 Reduced : 28/5/7 Plotted : 12/6/7



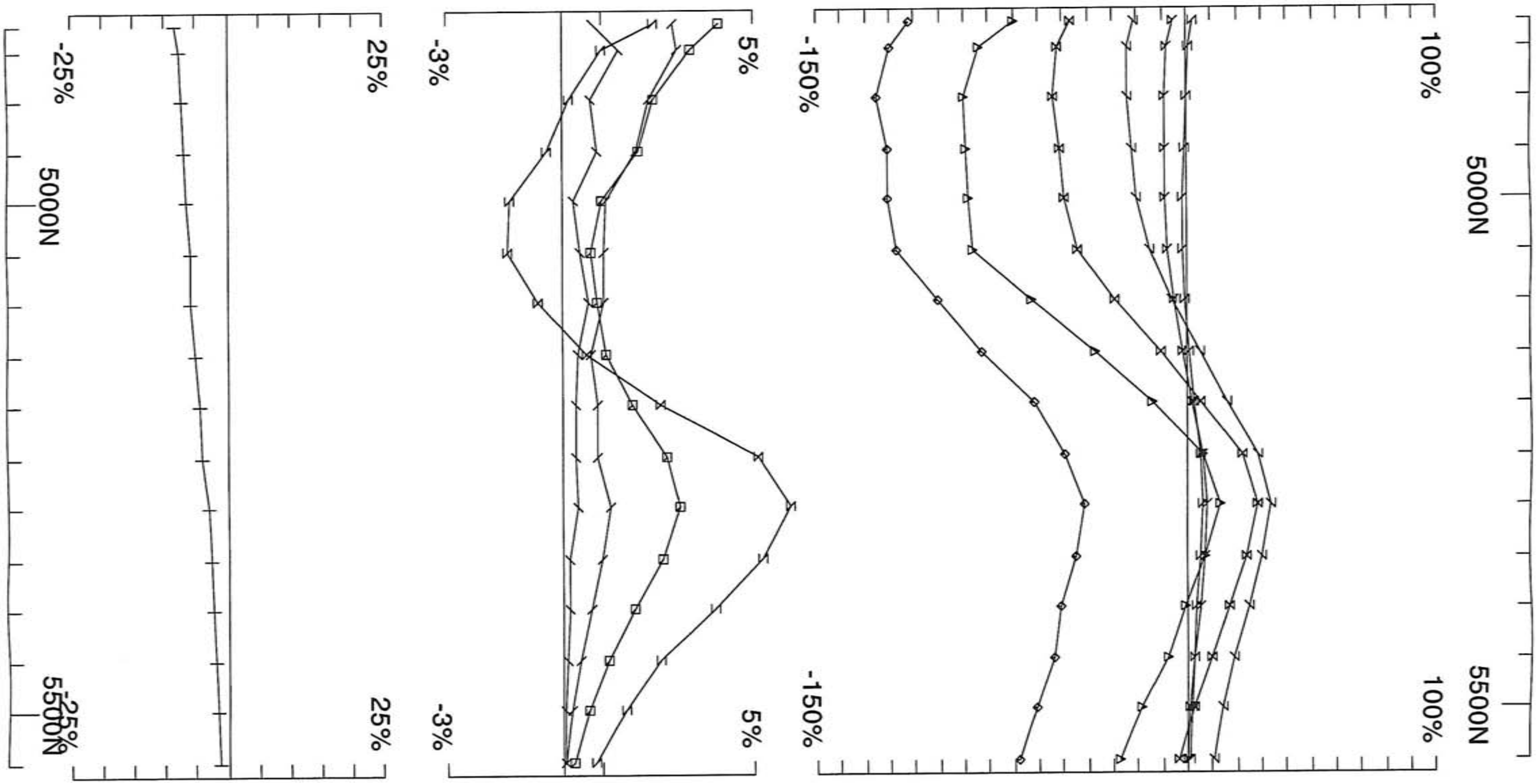
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8250E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 30/4/7 Reduced : 28/5/7 Plotted : 12/6/7



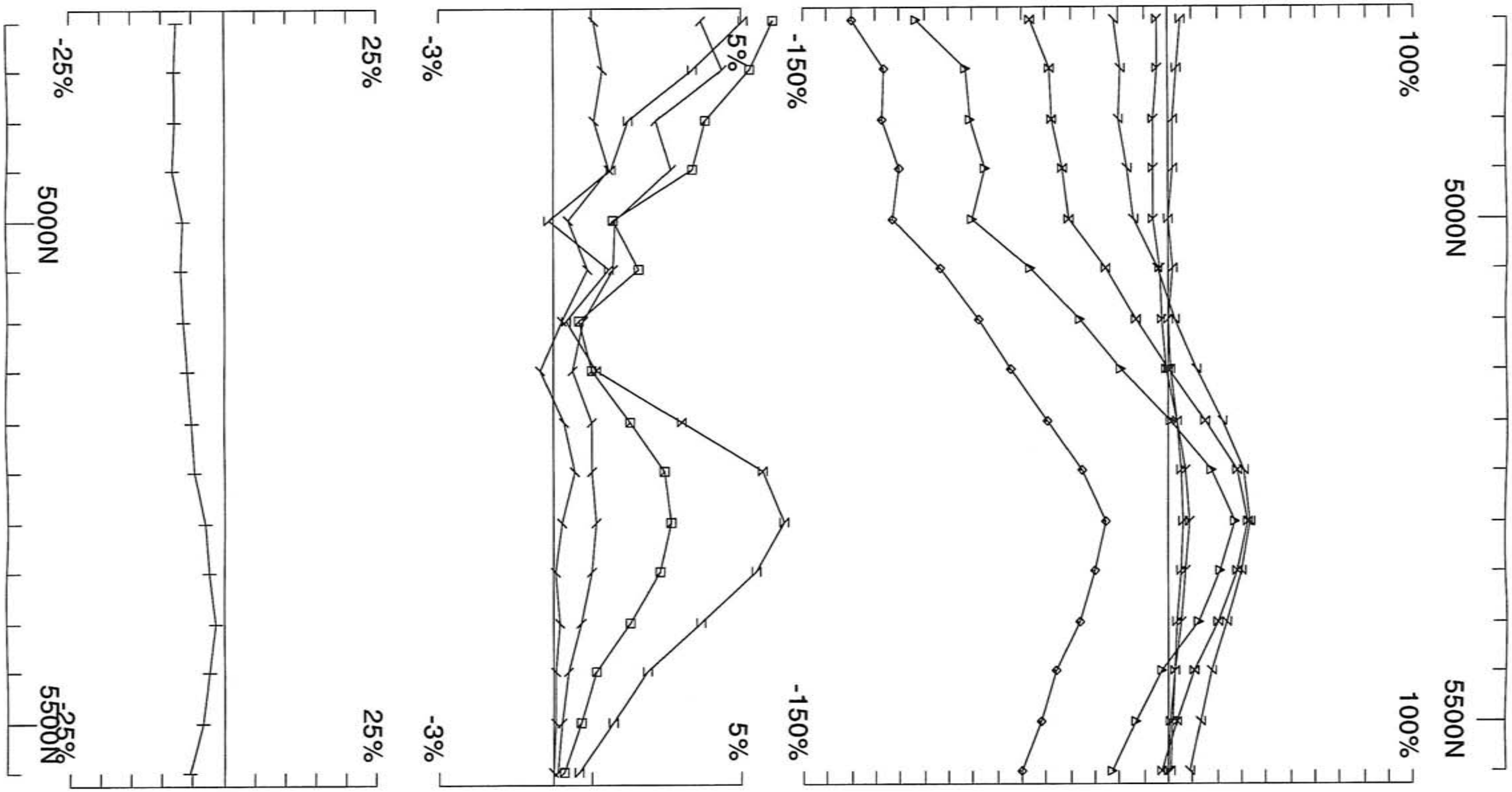
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8350E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 1/5/7 Reduced : 28/5/7 Plotted : 12/6/7



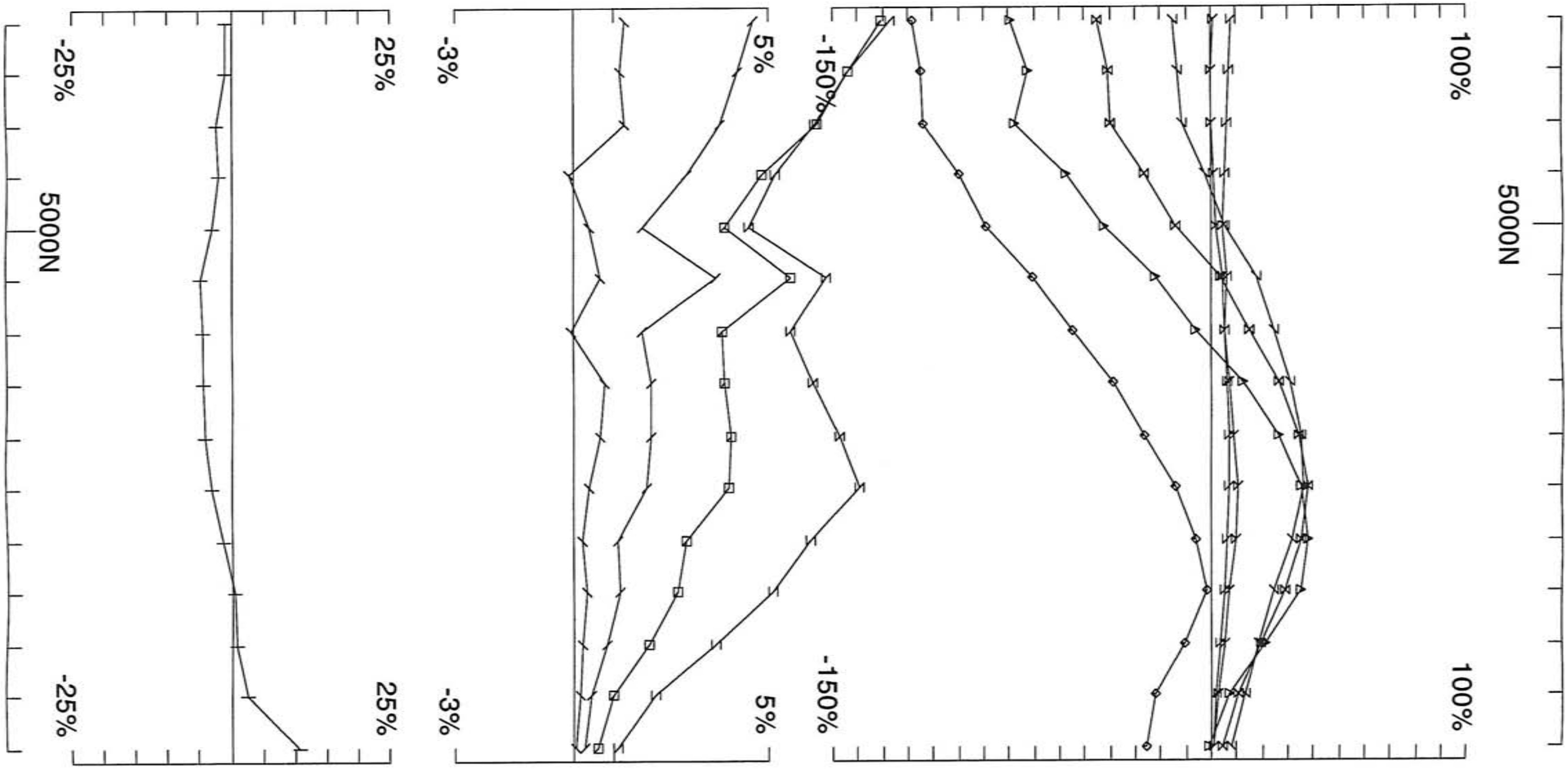
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8450E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 1/5/7 Reduced : 28/5/7 Plotted : 12/6/7



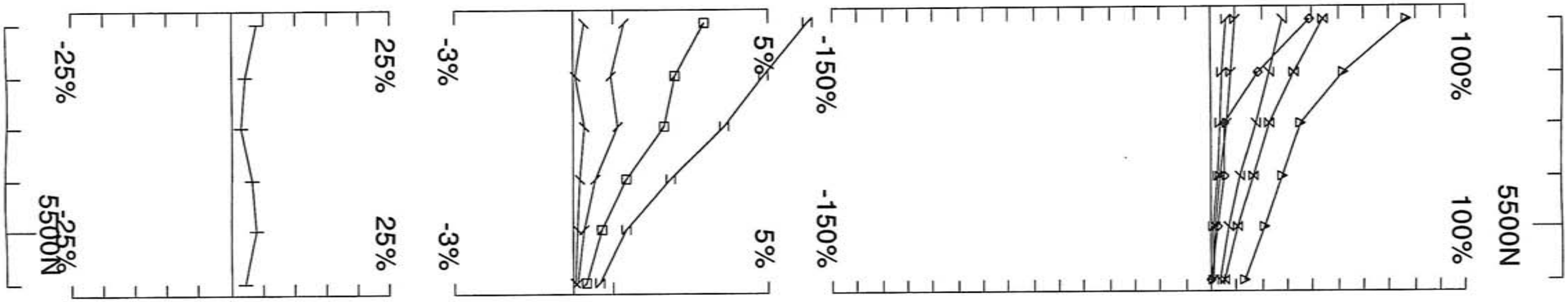
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8550E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 1/5/7 Reduced : 28/5/7 Plotted : 12/6/7



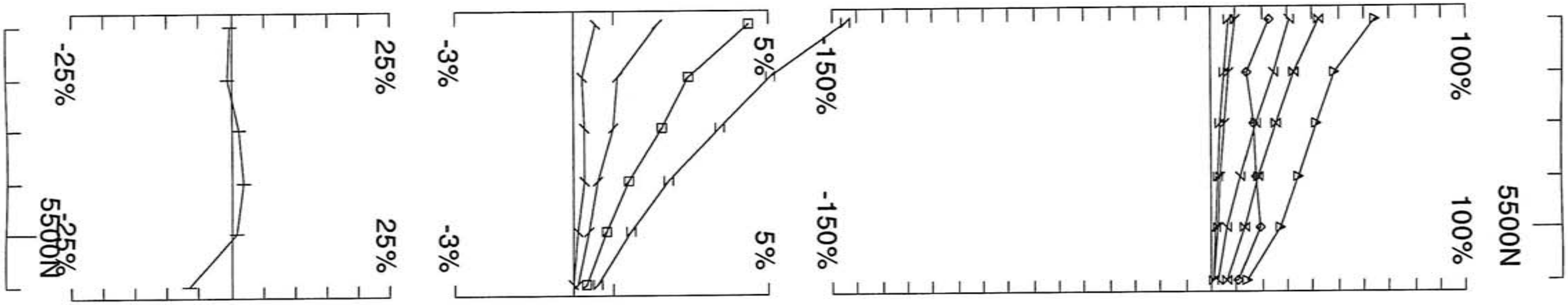
Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8650E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 1/5/7 Reduced : 28/5/7 Plotted : 12/6/7



Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8750E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 1/5/7 Reduced : 28/5/7 Plotted : 12/6/7



Loop: 2	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Cobalt Grid
Line: 8850E	Contin. Norm at depth of 0 m	For: International Millennium Mining Corp
Compt: Hz	Base Freq. 30.974 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 29/4/7 Reduced : 28/5/7 Plotted : 12/6/7



Loop: 2 Line: 8950E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Contin. Norm at depth of 0 m Base Freq. 30.974 Hz	UTEM Survey at: Cobalt Grid For: International Millennium Mining Corp LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0713 Surveyed : 29/4/7 Reduced : 28/5/7 Plotted : 12/6/7

Appendix B

0713 Production Diary

UTEM 3 Surface Survey

Cobalt Area Grid

2007

for

International Millennium Mining Corp

Production Log (0713)
UTEM Survey on the Cobalt Area Project
for
International Millennium Mining Corporation

Date	Rate	Production	Comments
April 17	Mob	-	O. Fernley and J.Frost drive from Kingston to Sudbury to drop off some equipment and pick up wire and then continue to Cobalt and check into the Haileybury Beach Motel. **Crew:** O. Fernley, J. Frost
April 18	L(1) - 2	-	The North side of the loop and the east side of the loop were laid and a spool was dropped on the SW corner for the next looping day. A screw in the rear left truck tire had to be fixed midday in Cobalt. **Crew:** O. Fernley, J. Frost
April 19	L(1) - 2	-	Finished laying the loop. Access and dense bush on the west side made laying the loop slow going. **Crew:** O. Fernley, J. Frost
April 20	P(1)-2	2500m	Read: **Loop 1** Line 9200N 6450N- 7700N Hz **Line 9100N 6450N- 7700N Hz** **Line 9000N 6450N- 7700N Hz** Read three lines from the transmitter. Data collected on line 9200 had problems. The operator thought this was possibly due to nearby power lines. **Crew:** O. Fernley, J. Frost To Date: 2.5km
April 21	P(1)-2	3700m	Read: **Loop 1** **Line 8900N 6450N- 7650N Hz** **Line 8800N 6450N- 7700N Hz** **Line 8600N 6450N- 7700N Hz** Read three more lines. **Crew:** O. Fernley, J. Frost To Date: 6.20km
April 22	P(1)-2	2350m	Read: **Loop 1** Line 8700N 6450N- 7700N Hz **Line 8500N 6450N- 7700N Hz** **Line 8440N 6450N- 7550N Hz** Read three more lines. Data on line 8700 had problems. This was not close to the power lines and was possibly an error. **Crew:** O. Fernley, J. Frost To Date: 8.55km

Date	Rate	Production	Comments
April 23	0.5 P(1)-2 0.5 D-2	-	Read: **Loop 1** Line 7700N 6450N- 7250N Hz Line 7600N 6700N- 7300N Hz Morning started with a loop break. Half the day was spent hiking into the far side of the loop to discover a break near the far SW corner. Collected data in the rain during the afternoon. Final reading cut short by another loop break. Data on both lines 7600 and 7700 had problems and had to be re-surveyed. **Crew:** O. Fernley, J. Frost To Date: 8.55km
April 24	0.5 P(1)-2 0.5 D-2	-	Read: **Loop 1** Line 9200N 6450N- 7700N Hz Fixed the loop break on the far SW corner. Loop was trampled by a moose again. Due to bad access there was only time to read one line. A different receiver was used to try and determine where this bad data is coming from. Upon reduction, the data still had problems and had to be re-surveyed. **Crew:** O. Fernley, J. Frost To Date: 8.55km
April 25	P(1)-2	2475m	Read: **Loop 1** **Line 9200N 6450N- 7700N Hz** **Line 9300N 6450N- 7675N Hz** Read 9200 with a different coil and reduced the data in the field. It looked good and so we read line 9300. 9300 had longer stacking times due to nearby power lines. **Crew:** O. Fernley, J. Frost To Date: 11.025km
April 26	P(1)-2	3000m	Read: **Loop 1** **Line 8100N 6450N- 7050N Hz** **Line 8200N 6450N- 7050N Hz** **Line 8300N 6500N- 7050N Hz** **Line 8700N 6450N- 7700N Hz** Read lines 8700 again and then read the front of three more lines. A loop break in the morning occurred but was fixed quickly as it was just up the hill from a road crossing. **Crew:** O. Fernley, J. Frost To Date: 14.075km

Date	Rate	Production	Comments
April 27	P(1)-2	1950m	Read: **Loop 1** **Line 8000N 6450N- 7500N Hz** **Line 8100N 7350N- 7700N Hz** **Line 8200N 7350N- 7700N Hz** **Line 8300N 7350N- 7550N Hz** Read 8000 and then completed the back of the three lines. Rained all day. Longer stacking times far from the loop. **Crew:** O. Fernley, J. Frost To Date: 16.025km
April 28	P(1)-2	3475m	Read: **Loop 1** **Line 7600N 6700N- 7300N Hz** **Line 7700N 6450N- 7250N Hz** **Line 7800N 6425N- 7450N Hz** **Line 7900N 6450N- 7500N Hz** Read the far side of the grid. **Crew:** O. Fernley, J. Frost To Date: 19.50km
April 29	P(1)-2	500m	Read: **Loop 2** **Line 8950N 5300N- 5550N Hz** **Line 8850N 5300N- 5550N Hz** Laid out the front of the second loop and read two lines from loop 2. **Crew:** O. Fernley, J. Frost To Date: 20.00km
April 30	P(1)-2	2975m	Read: **Loop 2** **Line 7950N 4800N- 5550N Hz** **Line 8050N 4800N- 5550N Hz** **Line 8150N 4825N- 5550N Hz** **Line 8250N 4800N- 5550N Hz** Read the far lines on the second grid. The labels have not been placed on these pegs. But they could still be read. **Crew:** O. Fernley, J. Frost To Date: 22.975km
May 1	P(1)-2	3725m	Read: **Loop 2** **Line 8350N 4800N- 5550N Hz** **Line 8450N 4800N- 5550N Hz** **Line 8550N 4825N- 5550N Hz** **Line 8650N 4800N- 5550N Hz** **Line 8750N 4800N- 5550N Hz** Read the rest of the second grid. **Crew:** O. Fernley, J. Frost To Date: 26.65km

Date	Rate	Production	Comments
May 2	L(1)-2	-	Had a late start. Went out in the afternoon and picked up the west and south side of the loops. This took until 8:00 pm that evening. **Crew:** O. Fernley, J. Frost
May 3	L(1)-2	-	Picked up the rest of the wire and checked out of the hotel and traveled to Sudbury. **Crew:** O. Fernley, J. Frost
May 4	Demob		Traveled from Sudbury to Kingston and unpacked the gear. **Crew:** O. Fernley, J. Frost

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LEGEND

P(n)-x	Surface Production (# of receivers) - # of personnel
L(n)-x	Looping (# of receivers) - # of personnel
S(n)-x	Standby (# of receivers) - # of personnel
D(n)-x	Down (# of receivers) - # of personnel

Appendix C

The UTEM SYSTEM

The UTEM System

UTEM Data Reduction and Plotting Conventions

Data Presentation

The UTEM SYSTEM

UTEM uses a large, fixed, horizontal transmitter loop as its source. Loops range in size from 300m x 300m up to as large as 4km x 4km. Smaller loops are generally used over conductive terrain or for shallow sounding work. The larger loops are only used over resistive terrain. The UTEM receiver is typically syncronized with the transmitter at the beginning of a survey day and operates remotely after that point. The clocks employed - one in each of the receiver and transmitter - are sufficiently accurate to maintain synchronisation.

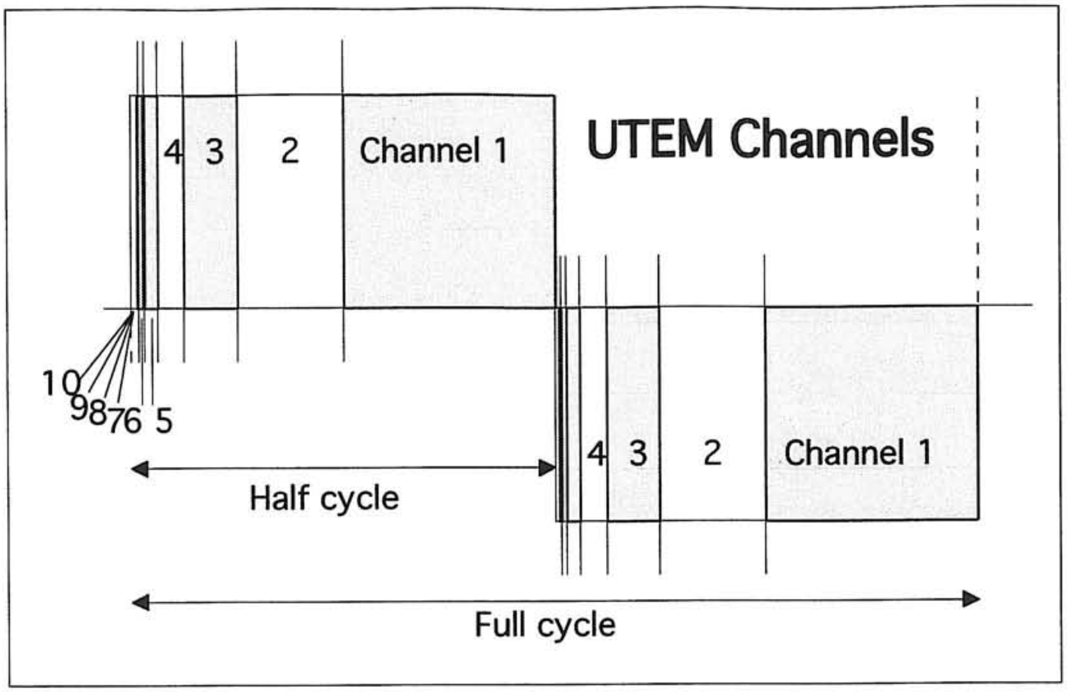
Measurements are routinely taken to a distance of 1.5 to twice the loop dimensions, depending on the local noise levels, and can be continued further. Lines are typically surveyed out from the edge of the loop but may also be read across the loop wire and through the centre of the loop, a configuration used mainly to detect horizontal conductors. BHUTEM - the borehole version of UTEM -surveys have been carried out to depths up to 3000+ metres.

System Waveform

The UTEM transmitter passes a low-frequency (4 Hz to 90 Hz) current of a precisely regulated triangular waveform through the transmitter loop. The frequency can be set to any value within the operating range of the transmitter, however, it is usually set at 31 Hz to minimise power line (60 Hz in North America) effects. Since a receiver coil responds to the time derivative of the magnetic field, the UTEM system really "sees" the step response of the ground. UTEM is the only time domain system which measures the step response of the ground. All other T.D.E.M. systems to date transmit a modified step current and "see" the (im)pulse response of the ground at the receiver. In practice, the transmitted UTEM waveform is tailored to optimize signal-to-noise. Deconvolution techniques are employed within the system to produce an equivalent to the conceptual "step response" at the receiver.

System Sampling

The UTEM receiver measures the time variation of the magnetic field in the direction of the receiver coil at 10 delay times (channels). UTEM channels are spaced in a binary, geometric progression across each half-cycle of the received waveform. Channel **10** is the earliest channel and it is $1/2^{10}$ of the half-cycle wide. Channel **1**, the latest channel, is $1/2^{1}$ of the half-cycle wide (see Figure below). The measurements obtained for each of 10 channels are accumulated over many half-cycles. Each final channel value, as stored, is the average of the measurements for that time channel. The number of half-cycles averaged generally ranges between 2048 (1024 full-cycles - 1K in UTEM jargon) to 32768 (16K) depending on the level of ambient noise and the signal strength.



System Configurations

For surface work the receiver coil is mounted on a portable tripod and oriented. During a surface UTEM survey the vertical component of the magnetic field (Hz) of the transmitter loop is always measured. Horizontal in-line (Hx) and cross-line (Hy) components are also measured if more detailed information is required. The UTEM System is also capable of measuring the two horizontal components of the electric field, Ex and Ey. A dipole sensor comprised of two electrodes is used to measure the electric field components. This is generally used for outlining resistive features to which the magnetic field is not very sensitive.

BHUTEM surveys employ a receiver coil that is smaller in diameter than the surface coil. The borehole receiver coil forms part of a down-hole receiver package used to measure the axial (along-borehole) component of the magnetic field of the transmitter loop. Due to the distance between coil and receiver in borehole surveys the signal must be transmitted up to the receiver. In BHUTEM the signal is transmitted to surface digitally using a kevlar-reinforced fibre-optic cable as a data link. Using a fibre-optic link avoids signal degradation problems and allows surveying of boreholes to 3000+m. The cable is also very light - the specific gravity is nearly 1.0 - making the cable handling hardware quite portable.

The EM Induction Process

Any time-varying transmitted ("primary") field induces current flow in conductive regions of the ground below and around the transmitter loop (i.e. in the earth or "half-space"). This current flow produces a measurable EM field, the secondary field, which has an inherent "inertia" that resists the change in primary field direction. This "inertial" effect is called self-inductance; it limits the rate at which current can change and is only dependent on the shape and size of a conductive path.

It takes a certain amount of time for the transmitted current flow to be redirected (reversed) and reestablished to full amplitude after the rate-of-change of the primary field reverses direction. This measurable reversal time is characteristic for a given conductor. In general, for a good conductor this time is greater than that of a poor conductor. This is because in a good conductor the terminal current level is greater, whereas its rate of change is limited by the inductance of the current path. The time-varying current causes an Emf in the sensor proportional to the time derivative of the current. This Emf decays with time - it vanishes when the reversal is complete - and the characteristic time of the Emf decay as measured by the sensor is referred to as the **decay time** of the conductor.

The large-scale current which is induced in the half-space by the primary field produces the half-space response as seen in typical UTEM profiles. This background response is influenced by the finite conductivity of the surrounding rock. Other currents may be induced in locally more conductive zones (conductors) that have longer decay times than the half-space response. The responses of these conductors are superimposed upon the background response. The result is that the UTEM receiver detects:

- the primary field waveform, a square-wave
- the half-space (background) response of the surrounding rock
- a slight-to-large response due to any conductors present.

The result is that in the presence of conductors the primary field waveform is substantially (and anomalously) distorted.

UTEM DATA REDUCTION and PLOTTING CONVENTIONS

The UTEM data as it appears in the data files is in total field, continuously normalized form. In this form, the magnetic field data collected by the receiver is expressed as a % of the calculated primary magnetic field vector magnitude at the station. These are total field values - the UTEM system measures during the "on-time" and as such samples both the primary and secondary fields.

For plotting purposes, the reduced magnetic field data (as it appears in the data file) are transformed to other formats as required. The following is provided as a description of the various plotting formats used for the display of UTEM data. A plotting format is defined by the choice of the *normalization* and *field type* parameters selected for display.

NORMALIZATION

UTEM results are always expressed as a % of a normalizing field at some point in space.

In **continuously normalized** form the normalizing factor (the denominator) is the magnitude of the computed local primary field vector. As the primary exciting field magnitude diminishes with increasing distance from the transmitter loop the response is continuously amplified as a function of offset from the loop. Although this type of normalization considerably distorts the response shape, it permits anomalies to be easily identified at a wide range of distances from the loop.

Note: An optional form of continuous normalization permits the interpreter to normalize the response to the magnitude of the primary field vector at a fixed depth below each station. This is useful for surface profiles which come very close to the loop. Without this adjustment option, the normalizing field is so strong near the loop that the secondary effects become too small in the presence of such a large primary component. In such circumstances interpretation is difficult, however; by "normalizing at some depth" the size of the normalizing field, near the loop in particular, is reduced and the resulting profile can be more effectively interpreted to a very close distance from the transmitter wire. The usual choice for the depth is the estimated target depth is used.

In **point normalized form** the normalizing factor is the magnitude of the computed primary field vector at a single point in space. When data is presented in this form, the point of normalization is displayed in the title block of the plot. Point normalized profiles show the non-distorted shape of the field profiles. Unfortunately, the very large range in magnitude of anomalies both near and far from the loop means that small anomalies, particularly those far from the loop, may be overlooked on this type of plot in favor of presenting larger amplitude anomalies.

Note: Selecting the correct plot scales is critical to the recognition of conductors over the entire length of a point normalized profile. Point normalized data is often used for interpretation where an analysis of the shape of a specific anomaly is required. Point normalized profiles are therefore plotted selectively as required during interpretation. An exception to this procedure occurs where surface data has been collected entirely inside a transmitter loop. The primary field does not vary greatly inside the loop, therefore, the benefits of continuous normalization are not required in the display of such results. In these cases data is often point normalized to a fixed point near the loop centre.

FIELD TYPE

The type of field may be either the **Total field** or the **Secondary field.** In general, it is the secondary field that is most useful for the recognition and interpretation of discrete conductors.

UTEM Results as Secondary Fields

Because the UTEM system measures during the transmitter on-time the determination of the secondary field requires that an estimate of the primary signal be subtracted from the observations. Two estimates of the primary signal are available:

1) UTEM Channel 1

One estimate of the primary signal is the value of the latest time channel observed by the UTEM System, channel 1. When Channel 1 is subtracted from the UTEM data the resulting data display is termed ***Channel 1 Reduced***. This reduction formula is used in situations where it can be assumed that all responses from any target bodies have decayed away by the latest time channel sampled. The Channel 1 value is then a reasonable estimate of the primary signal present during Channels 2....10.

In practice the ***Channel 1 Reduced*** form is most useful when the secondary response is very small at the latest delay time. In these cases channel 1 is indeed a good estimate of the primary field and using it avoids problems due to geometric errors or transmitter loop current/system sensitivity errors.

2) Calculated primary field

An alternate estimate of the primary field is obtained by computing the primary field from the known locations of the transmitter loop and the receiver stations. When the computed primary field is subtracted from the UTEM data the resulting data display is termed ***Primary Field Reduced*** .

The calculated primary field will be in error if the geometry is in error - mislocation of the survey stations or the loop vertices - or if the transmitter loop current/system sensitivity is in error. Mislocation errors from loop/station geometry may give rise to very large secondary field errors depending on the accuracy of the loop and station location method used. Transmitter loop current/system sensitivity error is rarely greater than 2%. ***Primary Field Reduced*** is plotted in situations where a large Channel 1 response is observed. In this case the assumption that the Channel 1 value is a reasonable estimate of the primary field effect is not valid.

Note: When UTEM data is plotted in the ***Channel 1 Reduced*** form the secondary field data for Channel 1 itself are always presented in ***Primary Field Reduced*** form and are plotted on a separate axis. This plotting format serves to show any long time-constant responses, magnetostatic anomalies and/or geometric errors present in the data.

Mathematical Formulations

In the following expressions:

$\mathbf{Rn_j}$ is the result plotted for the n^{th} UTEM channel,

$\mathbf{R1_j}$ is the result plotted for the latest-time UTEM channel, channel 1,

$\mathbf{Chn_j}$ is the raw component sensor value for the n^{th} channel at station j,

$\mathbf{Ch1_j}$ is the raw component sensor value for channel 1 at station j,

$\mathbf{H^P{}_j}$ is the computed primary field component in the sensor direction

$|\mathbf{H^P}|$ is the magnitude of the computed primary field at:

- a fixed station for the entire line (point normalized data)
- the local station of observation (continuously normalized data)
- a fixed depth below the station (continuously normalized at a depth).

Channel 1 Reduced Secondary Fields : Here, the latest time channel, Channel 1 is used as an "estimate" of the primary signal and channels 2-10 are expressed as:

$$Rn_j = (Chn_j - Ch1_j) / |H^P| \quad x\,100\%$$

Channel 1 itself is reduced by subtracting a calculation of the primary field observed in the direction of the coil, $\mathbf{H^P}$ as follows:

$$R1_j = (Ch1_j - H^P{}_j) / |H^P| \quad x\,100\%$$

Primary Field Reduced Secondary Fields : In this form all channels are reduced according to the equation used for channel 1 above:

$$Rn_j = (Chn_j - H^P{}_j) / |H^P| \quad x\,100\%$$

This type of reduction is most often used in cases where very good geometric control is available (leading to low error in the calculated primary field, $\mathbf{H^P{}_j}$) and where very slowly decaying responses result in significant secondary field effects remaining in channel 1 observations.

UTEM Results as a Total Field

In certain cases results are presented as a % of the **Total Field**. This display is particularly useful, in borehole surveys where the probe may actually pass through a very good conductor. In these cases the shielding effect of the conductor will cause the observed (total) field to become very small below the intersection point. This nullification due to shielding effects on the total field is much easier to see on a separate ***Total Field*** plot. In cases where the amplitude of the anomalies relative to the primary field is small, suggesting the presence of poorly conductive bodies, the ***Total Field*** plot is less useful.

The data contained in the UTEM reduced data files is in ***Total Field,*** continuously normalized form if:

$$Rn_j = Chn_j / |H^P| \quad x\,100\%$$

DATA PRESENTATION

All UTEM survey results are presented as profiles in an Appendix of this report. For BHUTEM surveys the requisite Vectorplots, presented as plan and section views showing the direction and magnitude of the calculated primary field vectors for each transmitter loop, are presented in a separate Appendix.

The symbols used to identify the channels on all plots as well as the mean delay time for each channel is shown in the table below.

UTEM System Mean Delay Times
10 Channel Mode @ 31 hz.(approx.)
(base freq: 30.974 hertz)

Channel #	Delay time (ms)	Plot Symbol
1	12.11	|
2	6.053	\
3	3.027	/
4	1.513	□
5	0.757	Σ
6	0.378	◭
7	0.189	7
8	0.095	X
9	0.047	Δ
10	0.024	◇

Notes on Standard plotting formats:

10 channel data in ***Channel 1 Reduced*** form - The data are usually displayed on three separate axes. This permits scale expansion, allowing for accurate determination of signal decay rates. The standard configuration is:

Bottom axis - Channel 1 (latest time) is plotted alone in ***Primary Field Reduced*** form using the same scale as the center axis.

Center axis - The intermediate to late time channels, ch5 to ch2 are plotted on the center axis using a suitable scale.

Top axis - The early time channels, ch10 to ch6 and a repeat of ch5 for comparison are plotted on the top axis at a reduced scale. The earliest channels, ch8 to ch10, may not be plotted to avoid clutter.

10 channel data in ***Primary Field Reduced*** form: The data are displayed using a single axis plot format. Secondary effects are plotted using a Y axis on each data plot with peak to peak values up to 200%.

BHUTEM data plotted as total field profiles: Data are expressed directly as a percentage of the ***Total Field*** value. The Y axis on each single axis data plot shows peak values of up to 100%. These departures are always relative to the measured total field value at the observation station.

BHUTEM data plotted as secondary field profiles: Check the title block of the plot to determine if the data is in ***Channel 1 Reduced*** form or in ***Primary Field Reduced*** form.

Note that on all BHUTEM plots the ratio between the axial component of the primary field of the loop and the magnitude of the total primary field strength **(dc)** is plotted as a profile without symbols. In UTEM jargon this is referred to as the "primary field" and it is plotted for use as a polarity reference tool.

Appendix D

Note on sources of anomalous Ch1

Note on sources of anomalous Ch1

This section outlines the possible sources of anomalous channel 1 which is not correlated to the Ch2-10 data plotted on the upper axes of a *channel 1 normalized* plot.

1) **Mislocation of the transmitter loop and/or survey stations**

Mislocating the transmitter loop and/or the survey stations results in an error in the calculated primary field at the station and appears as an anomalous Ch1 value not correlated to *channel 1 normalized* Ch2-10. The effect is amplified near the loop front. This can be seen in the profiles - the error in Ch1 generally increases approaching the loop. As a rule a 1% error in measurement of the distance from the loop will result in, for outside the loop surveys, an error in Ch1 of:

- 1% near the loop front (long-wire field varies as $1/r$)
- 3% at a distance from the loop front (dipolar field varies as $1/r^3$)
- 2% at intermediate distances (intermediate field varies as $\sim 1/r^2$)

Errors in elevation result in smaller errors but as they often affect the chainage they accumulate along the line.

The in-loop survey configuration generally diminishes geometric error since the field gradients are very low. At the centre of the loop the gradient in the vertical field is essentially zero so it is difficult to introduce geometric anomalies near the loop centre. Near the loop sides and at the closest approach of the lines to the wire mislocation of the loop and the station becomes more critical. Typically loop sides are designed to be >200m from any survey stations.

2) **Magnetostatic UTEM responses**

Magnetostatic UTEM responses arise over rocks which generate magnetic anomalies. Such magnetic materials will amplify the total (primary + secondary) field of the UTEM transmitter which is sensed by the receiver coil. The secondary field is generated by subtracting a computed primary which does not include magnetic effects. This can give rise to strong and abrupt channel 1 anomalies when the source of the magnetics is at surface. This is the case in a number of places on these grids. UTEM magnetostatic anomalies differ from DC magnetic anomalies in the following three major ways:

1) In the case of DC magnetics the field is dipping N and is very uniform over the scale of the survey area while the UTEM field inside the loop is vertical and it is stronger near the loop edges.
2) Most aeromagnetics are collected as total field while with UTEM we measure a given (in this case the z) component.
3) DC magnetic instruments observe the total magnetization of the causative body which is due to its susceptibility as well as any remnant magnetization. An AC method such as UTEM will not respond to the remnant portion of the magnetization.

The larger amplitude of the UTEM Ch1 response is explained by the fact that the UTEM primary field is often more favourably coupled (magnetostatically speaking) to magnetic mineralization as compared to the earths field. Another factor could be the presence of a reverse remnant component to the magnetization.

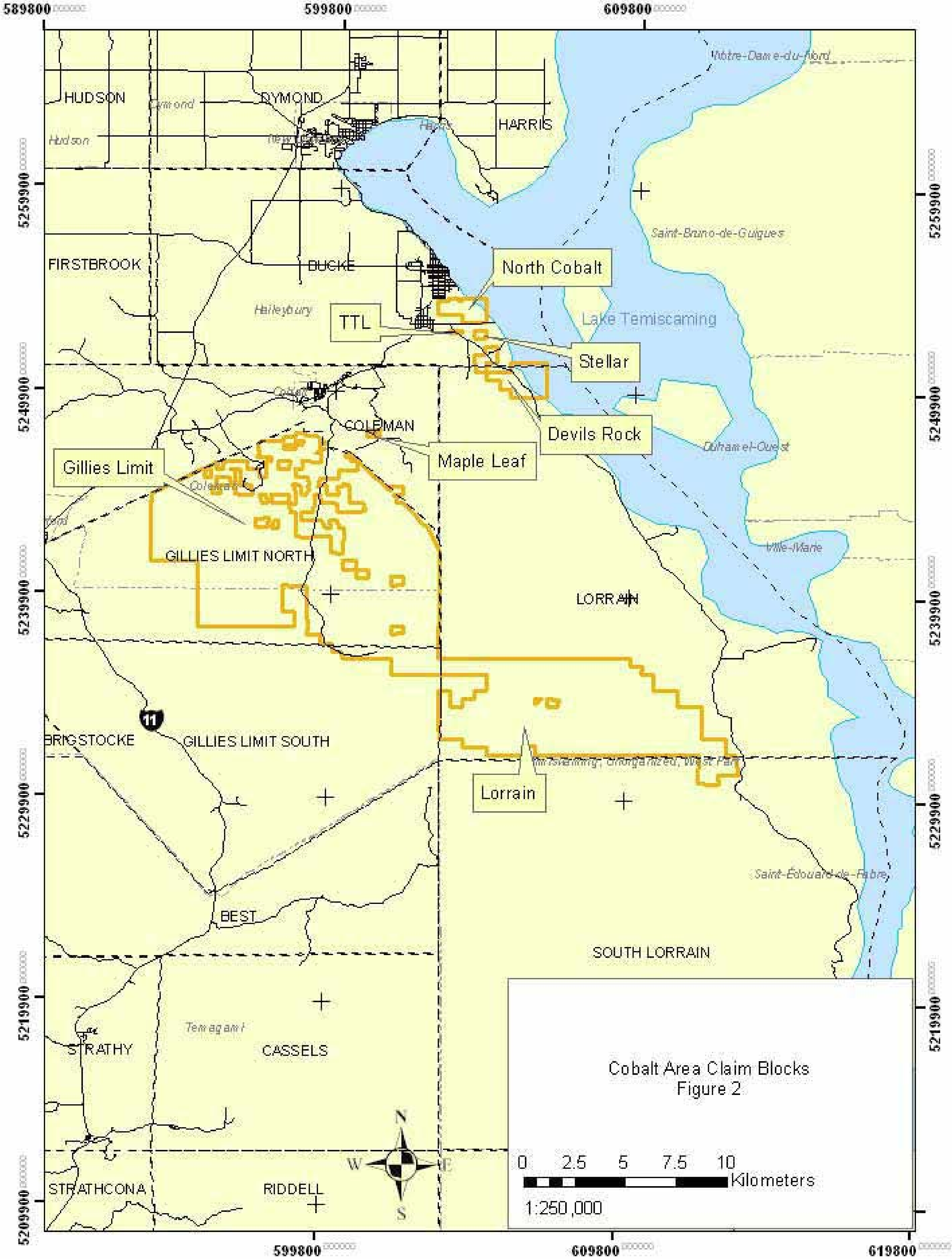
Note that positive (*negative*) magnetic anomalies will cause:

- positive (*negative*) Ch1 anomalies in data collected outside the loop
- negative (*positive*) Ch1 anomalies in data collected inside the loop

3) **Extremely good conductors**

An extremely good conductor will be characterized by a time constant much longer than the half-period (@ 30Hz >>16ms). This will give rise to an anomalous Ch1 which is not correlated to the Ch2-10 data plotted on the upper axes of a *channel 1 normalized* plot.

Figure 1: Regional Location Map of Ontario



Cobalt Area Claim Blocks
Figure 2

Cobalt Area Project
Claim Location Map
North Cobalt Group
Figure 3a

Created April 14, 2006 by GIX Inc.
North American Datum 1983 UTM Zone 17; 2000m Grid
Based on MNDM Claimap Data, and MNR OBM Data

Legend

Withdrawn Land

Dispositions

Patent, Lease, or License of Occupation

- Cabo
- Other

Ontario Mining Claims

- Cabo

Mining Claim

- Other

1:50,000

0 250 500 1,000 1,500 2,000 Meters

Land Tenure

- Water power lease agreement
- LUP Land use permit
- Camp
- OIC Order in Council

Freehold Patent

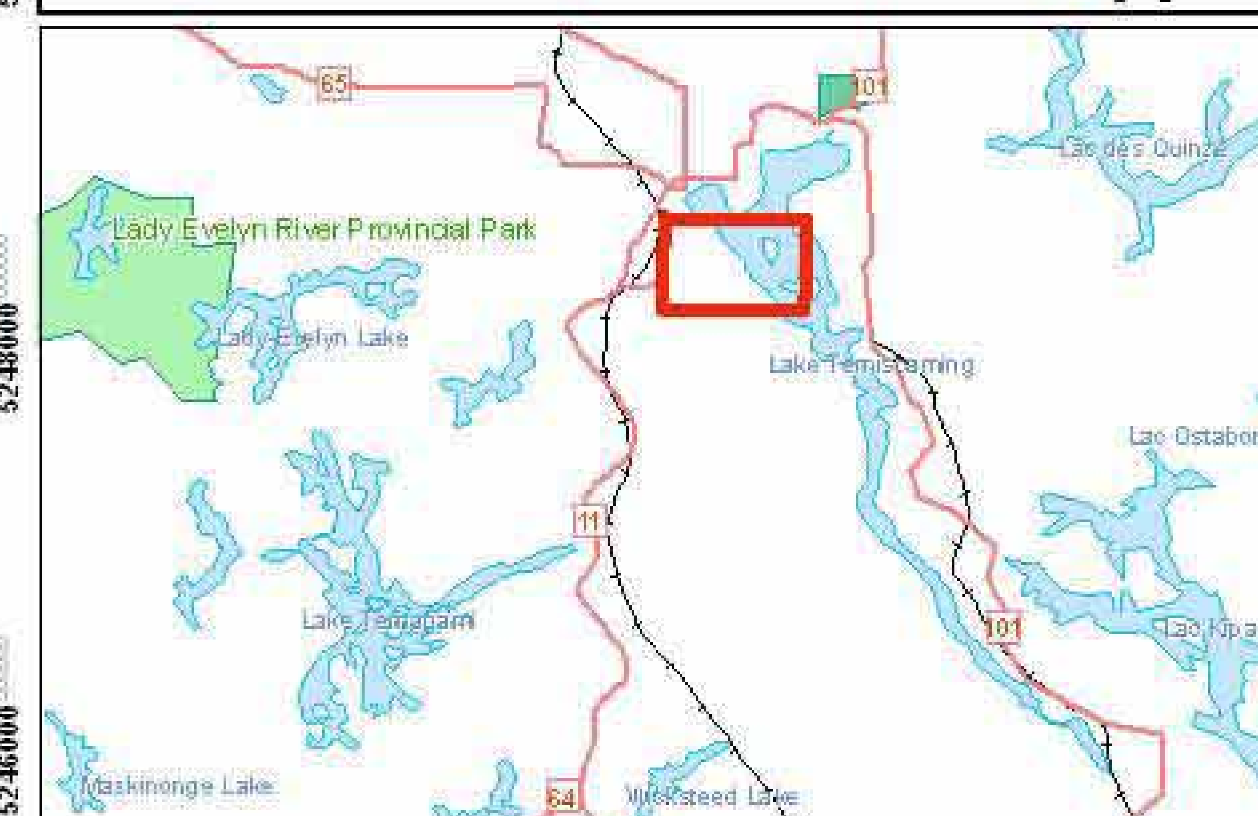
- Mining rights only
- Surface and mining rights
- Surface rights only

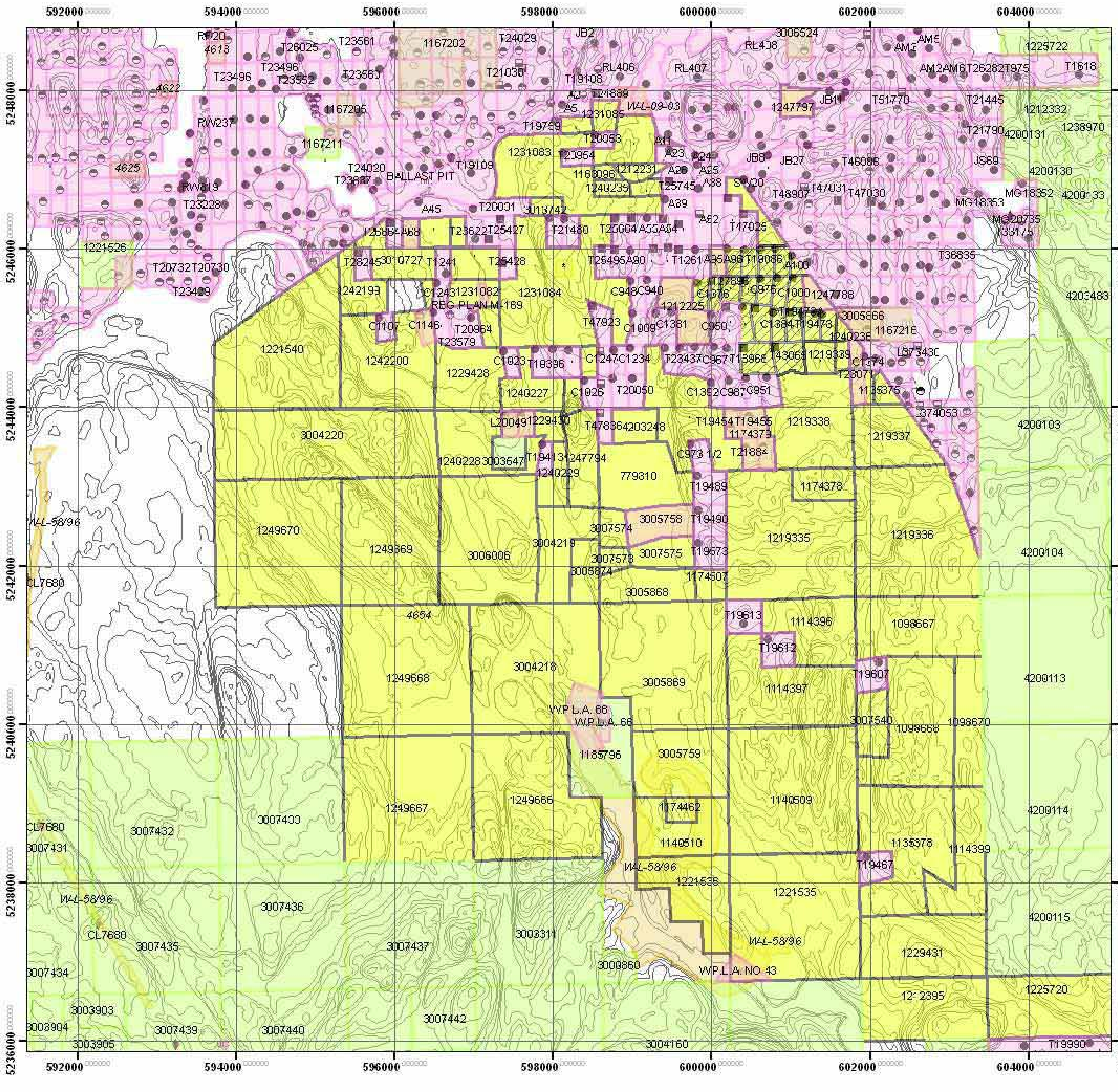
Leasehold Patent

- Surface and mining rights
- Surface rights only
- Mining rights only

License of Occupation

- Surface and mining rights





Cobalt Area Project
Claim Location Map
Gillies Limit Group
Figure 3b

Created April 14, 2006 by GIX Inc.
North American Datum 1983 UTM Zone 17; 2000m Grid
Based on MNDM Claimap Data, and MNR OBM Data

Legend

Dispositions

Patent, Lease, or License of Occupation
- Cabo
- Other

Ontario Mining Claims

Mining Claim
- Cabo
- Other
- Withdrawn Land

Land Tenure
- Water power lease agreement
- Land use permit
- Camp
- Order in Council

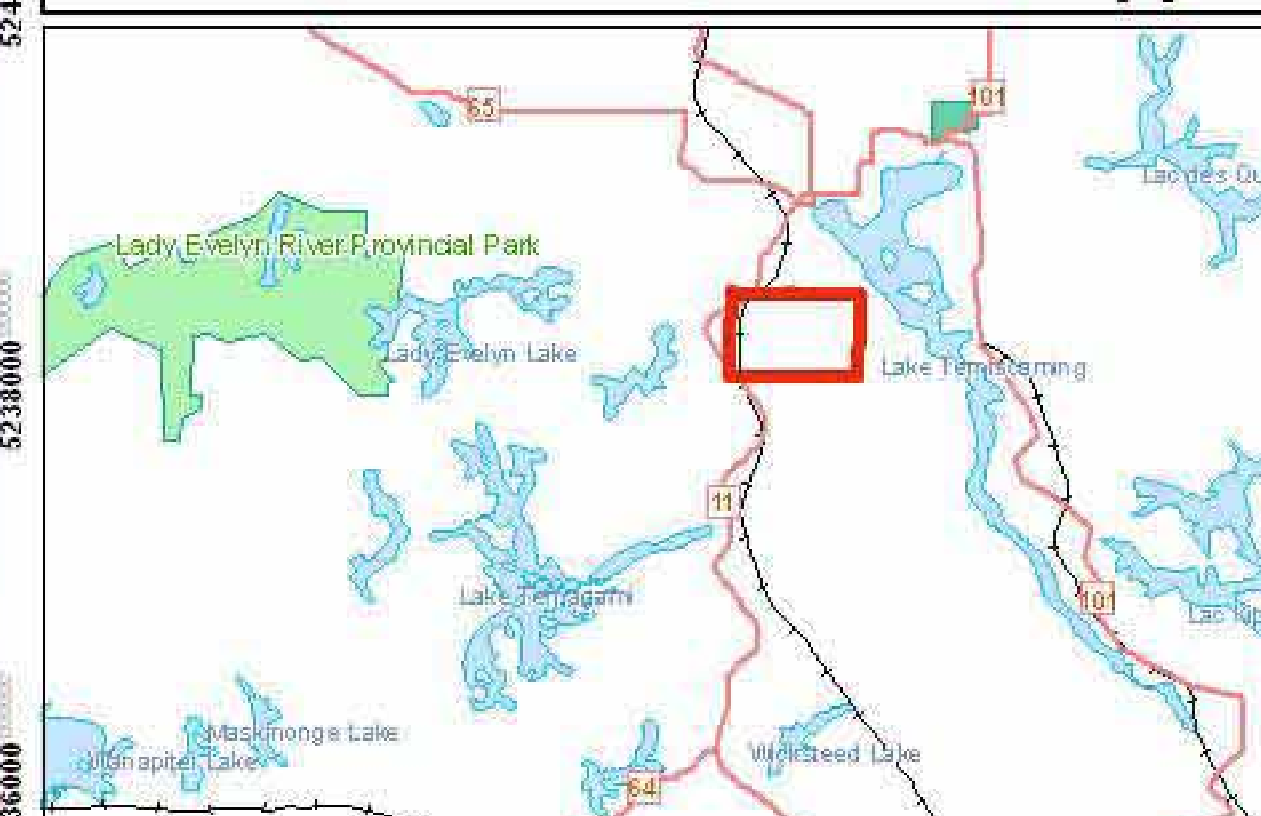
Freehold Patent
- Mining rights only
- Surface and mining rights
- Surface rights only

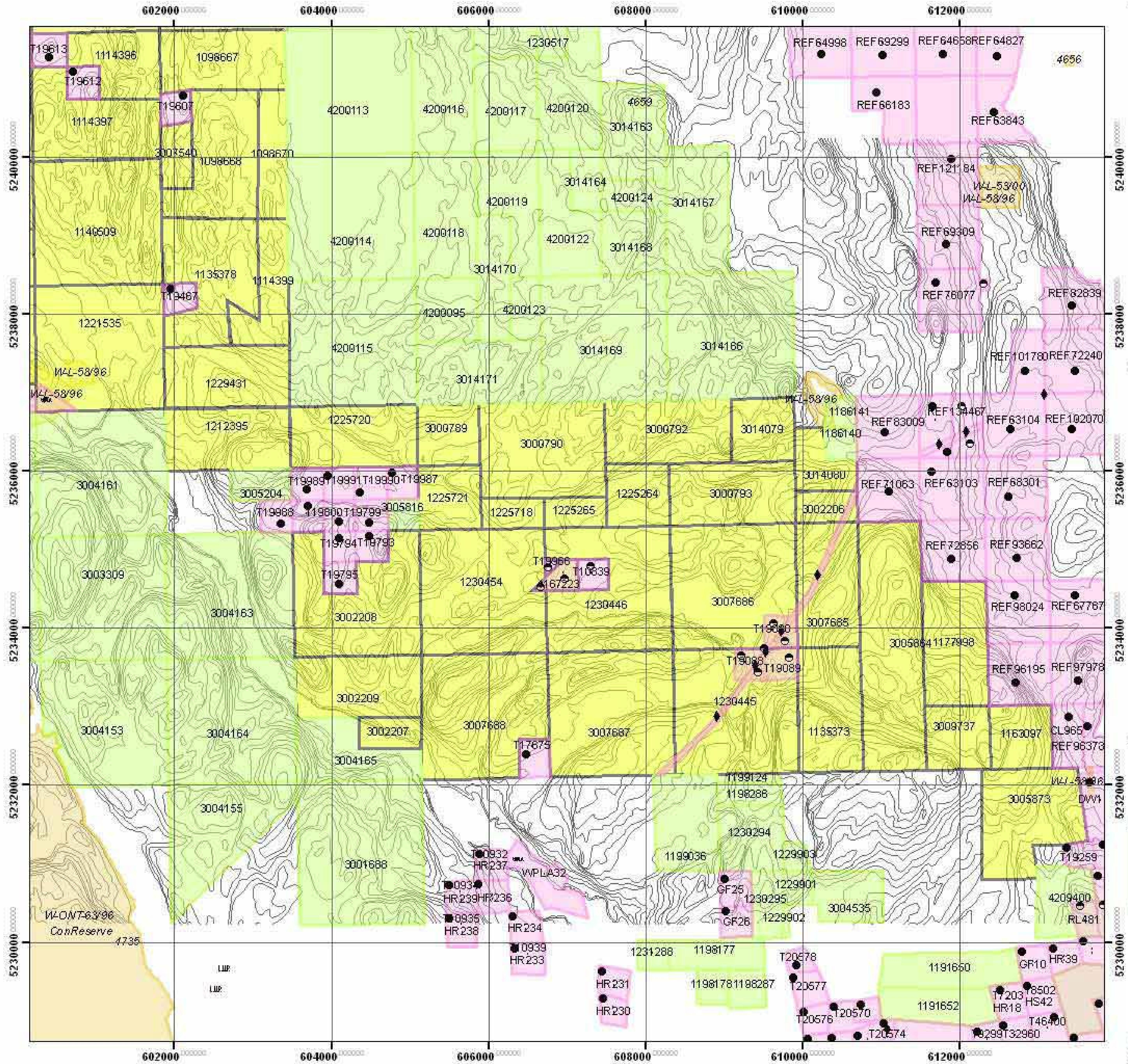
Leasehold Patent
- Surface and mining rights
- Surface rights only
- Mining rights only

License of Occupation
- Surface and mining rights

1:50,000

0 250 500 1,000 1,500 2,000 Meters





Cobalt Area Project
Claim Location Map
Lorraine Group
Figure 3c

Created April 14, 2005 by GIX Inc.
North American Datum 1983 UTM Zone 17; 2000m Grid
Based on MNDM Claimap Data, and MNR OBM Data

Legend

Withdrawn Land

Dispositions

Patent, Lease, or License of Occupation

- Cabo
- Other

Ontario Mining Claims

Mining Claim

- Cabo
- Other

1:50,000

0 250 500 1,000 1,500 2,000 Meters

Land Tenure

- WPL Water power lease agreement
- LUP Land use permit
- Camp
- OIC Order in Council

Freehold Patent

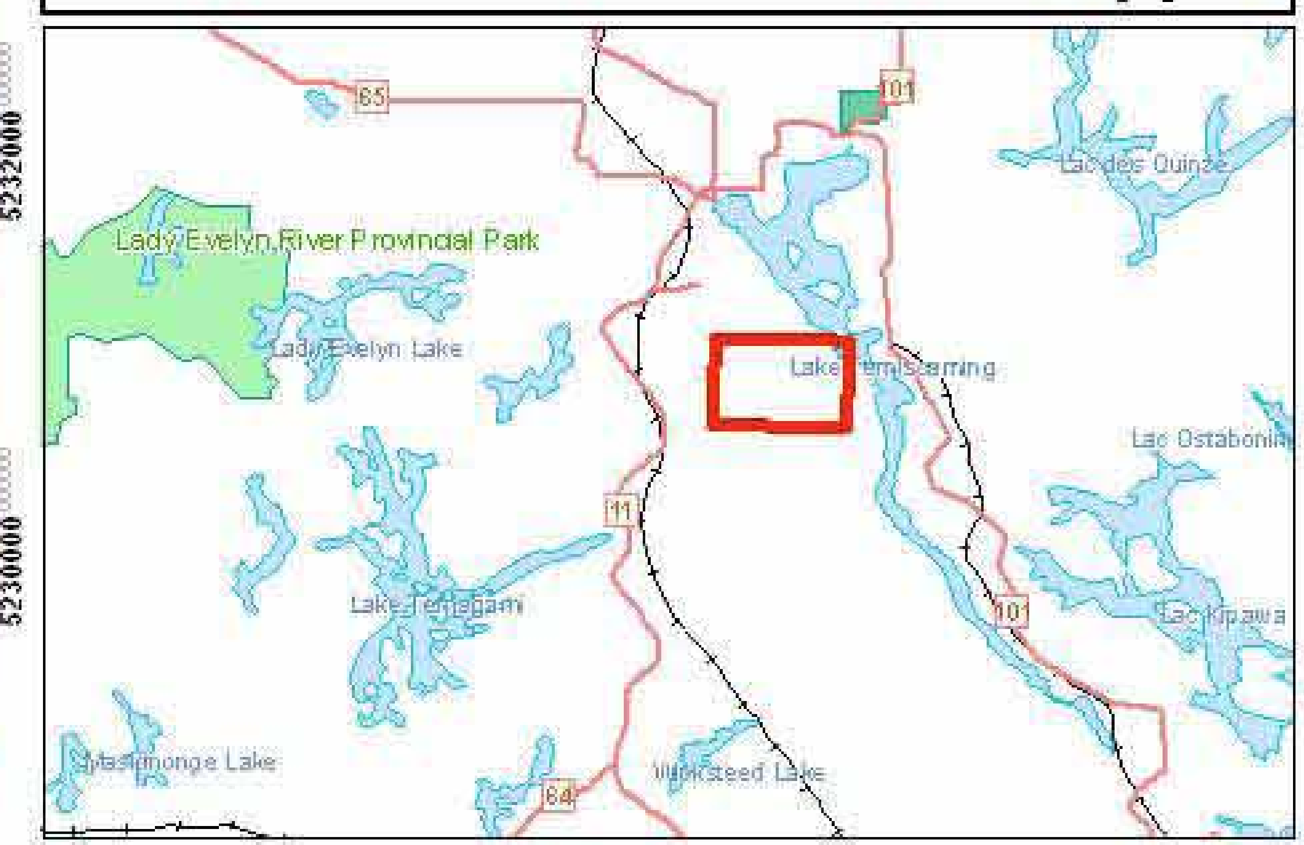
- Mining rights only
- Surface and mining rights
- Surface rights only

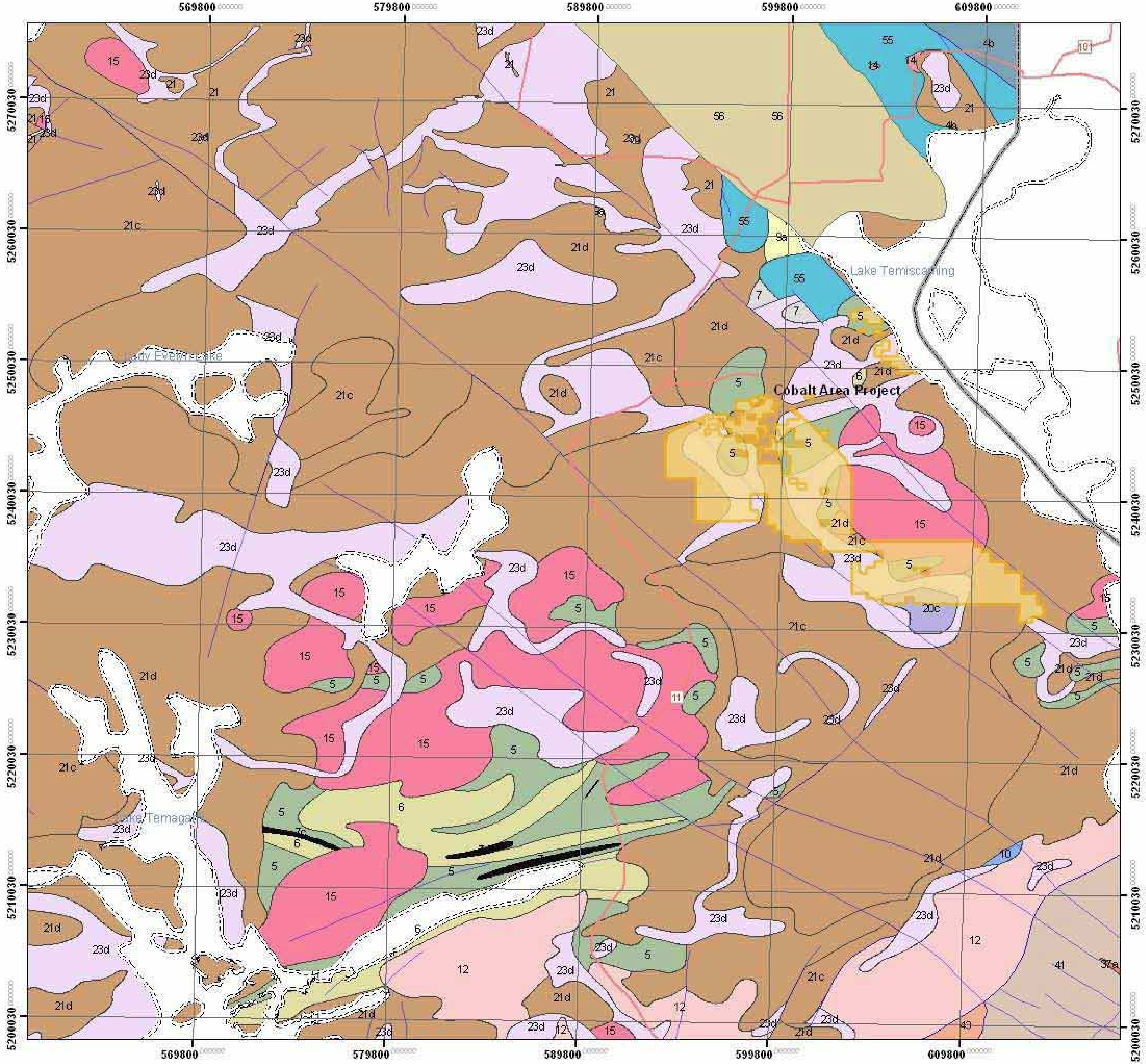
Leasehold Patent

- Surface and mining rights
- Surface rights only
- Mining rights only

License of Occupation

- Surface and mining rights





Cobalt Area Project
Regional Geology Map
Figure 4

Created August 15, 2005 by GIX Inc.
GCS North American 1983; 10 kilometre grid
Based on MNDM 1:250k Bedrock Geology

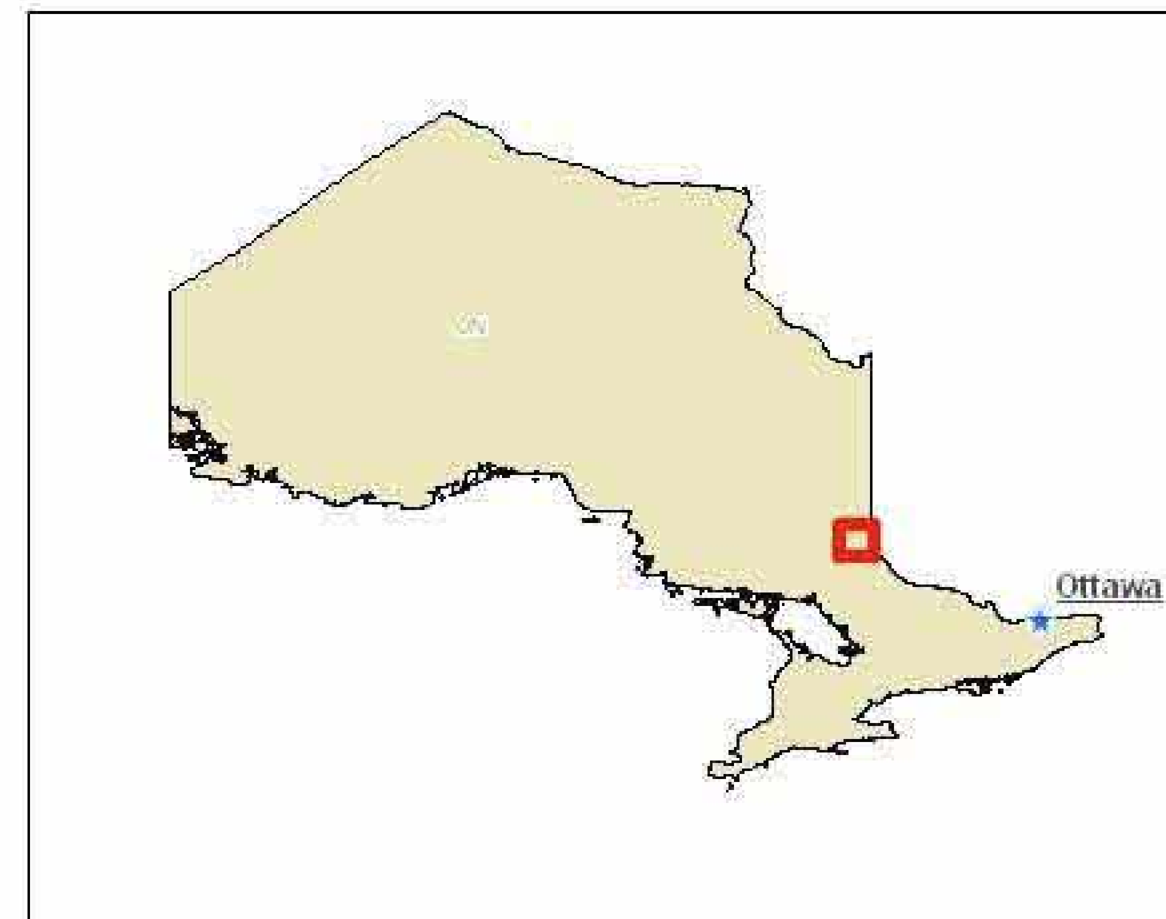
0 2.5 5 7.5 10 Kilometers

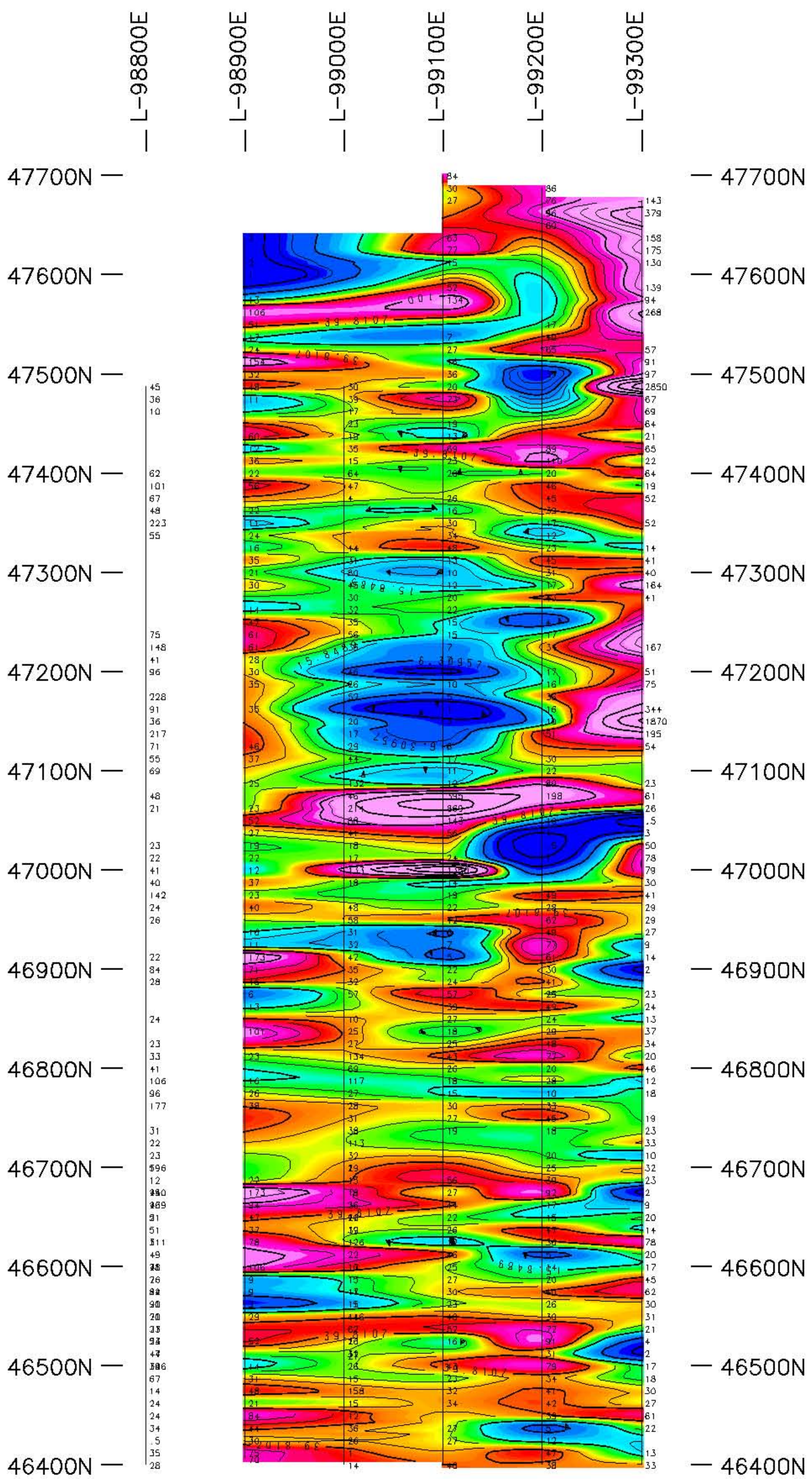
1:300,000

N
W E
S

Legend

- 56 Sandstone, shale, dolostone, siltstone
- 55 Shale, limestone, dolostone, siltstone
- 43 Felsic igneous rocks
- 42 Anorthosite and alkalic igneous rocks
- 41 Migmatitic rocks and gneisses of uncertain protolith
- 40 Mafic rocks
- 39 Gneisses of metasedimentary origin
- 37a Grenville swarm (~575 Ma): diabase dikes
- 37c Gabbro, diorite, ultramafic rocks, granophyre
- 23d Nipissing sills (2219 Ma): diabase sills, dikes and related granophyre (see Dikes_II shape file)
- 21 Cobalt Gp.: siltstone, argillite, sandstone, conglomerate
- 21b Gordon Lake Formation: siltstone, argillite, sandstone
- 21c Lorrain Formation: quartz sandstone, minor conglomerate, siltstone
- 21d Gowganda Formation: conglomerate, sandstone, siltstone, argillite
- 20b Espanola Formation: limestone, dolostone, siltstone, sandstone
- 20c Bruce Formation: conglomerate with minor sandstone and siltstone
- 19a Mississagi Formation: quartz-feldspar sandstone, argillite and conglomerate
- 15 Massive granodiorite to granite
- 14 Diorite-monzodiorite-granodiorite suite
- 12 Foliated tonalite suite
- 11 Gneissic tonalite suite
- 10 Mafic and ultramafic rocks
- 9a Metasedimentary rocks: conglomerate, arkose, arenite, wacke, sandstone, siltstone, argillite
- 7 Metasedimentary rocks
- 7a Paragneisses and migmatites
- 7c Marble, chert, iron formation, minor metavolcanic rocks
- 6 Felsic to intermediate metavolcanic rocks
- 5 Mafic to intermediate metavolcanic rocks
- 4b Mafic metavolcanic rocks, metasedimentary rocks and pyroclastic rocks
- Province Boundaries





Declination12

Dates Samples Picked Up:
May, June 2007

Soils Tested by:
SGS Laboratories
Toronto, Ontario

Contour Interval:
log base 10

50 0 50 100 150 200 250
(metres)

GEOTRONICS CONSULTING INC

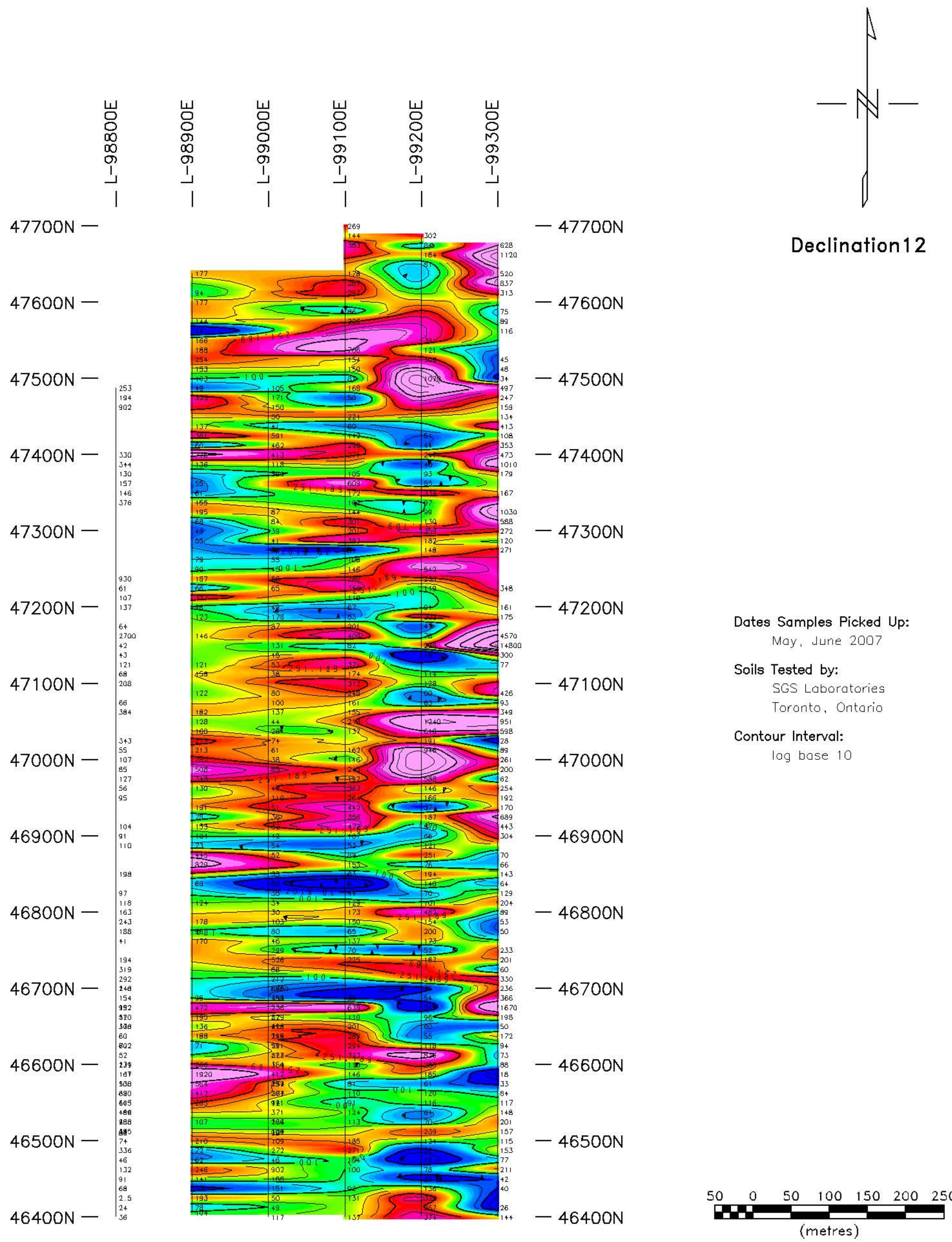
INTERNATIONAL MILLENNIUM MINING CORP

COBALT PROPERTY
GILLIES LIMIT NORTH TOWNSHIP
Larder Mining Division, Ontario

MMI SOIL GEOCHEMISTRY SURVEY
CONTOUR PLAN MAP
SILVER

Drawn by:	Job No:	NTS:	Date:	Fig No:
DGM	07-03	31M/5	June 07	GC-1

GEOTRONICS CONSULTING INC
SURREY BC.



Dates Samples Picked Up:
May, June 2007

Soils Tested by:
SGS Laboratories
Toronto, Ontario

Contour Interval:
log base 10

GEOTRONICS CONSULTING INC
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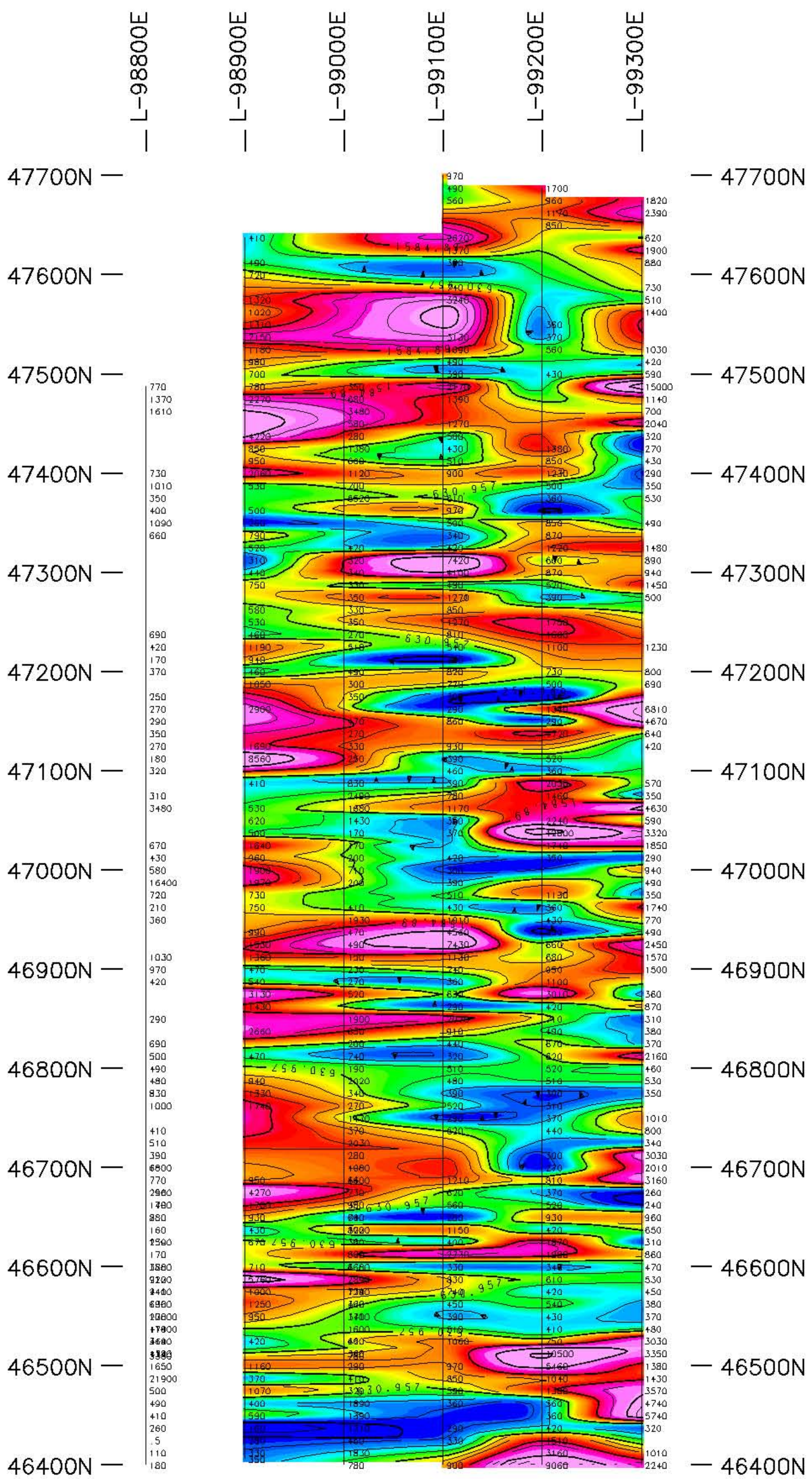
INTERNATIONAL MILLENNIUM MINING CORP

COBALT PROPERTY
GILLIES LIMIT NORTH TOWNSHIP
Larder Mining Division, Ontario

MMI SOIL GEOCHEMISTRY SURVEY
CONTOUR PLAN MAP
COBALT

Drawn by:	Job No:	NTS:	Date:	Fig No:
DGM	07-03	31M/5	June 07	GC-2



Declination12

Dates Samples Picked Up:
May, June 2007

Soils Tested by:
SGS Laboratories
Toronto, Ontario

Contour Interval:
log base 10

50 0 50 100 150 200 250
(metres)

GEOTRONICS CONSULTING INC

INTERNATIONAL MILLENNIUM MINING CORP

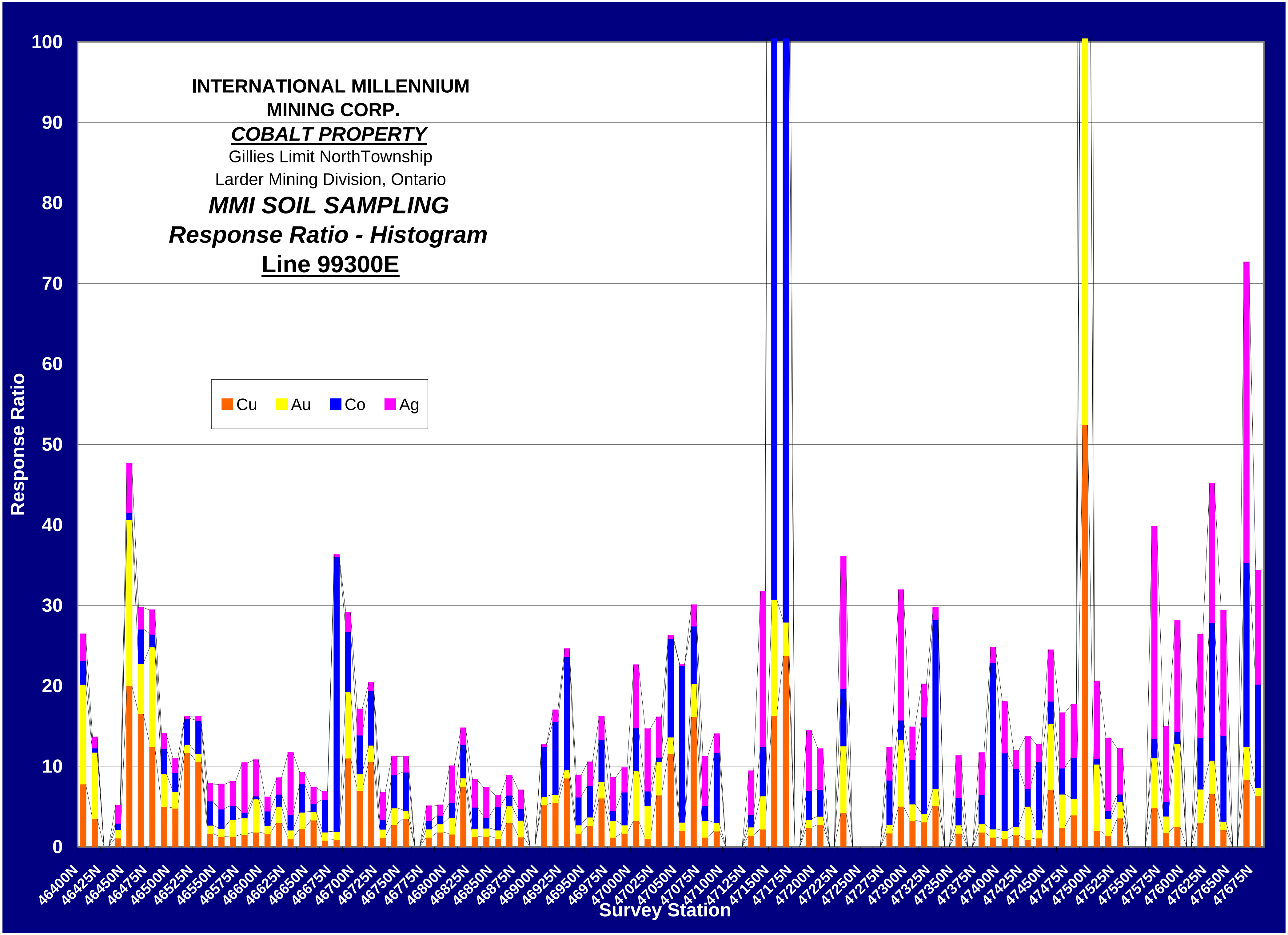
COBALT PROPERTY
GILLIES LIMIT NORTH TOWNSHIP
Larder Mining Division, Ontario

MMI SOIL GEOCHEMISTRY SURVEY
CONTOUR PLAN MAP
COPPER

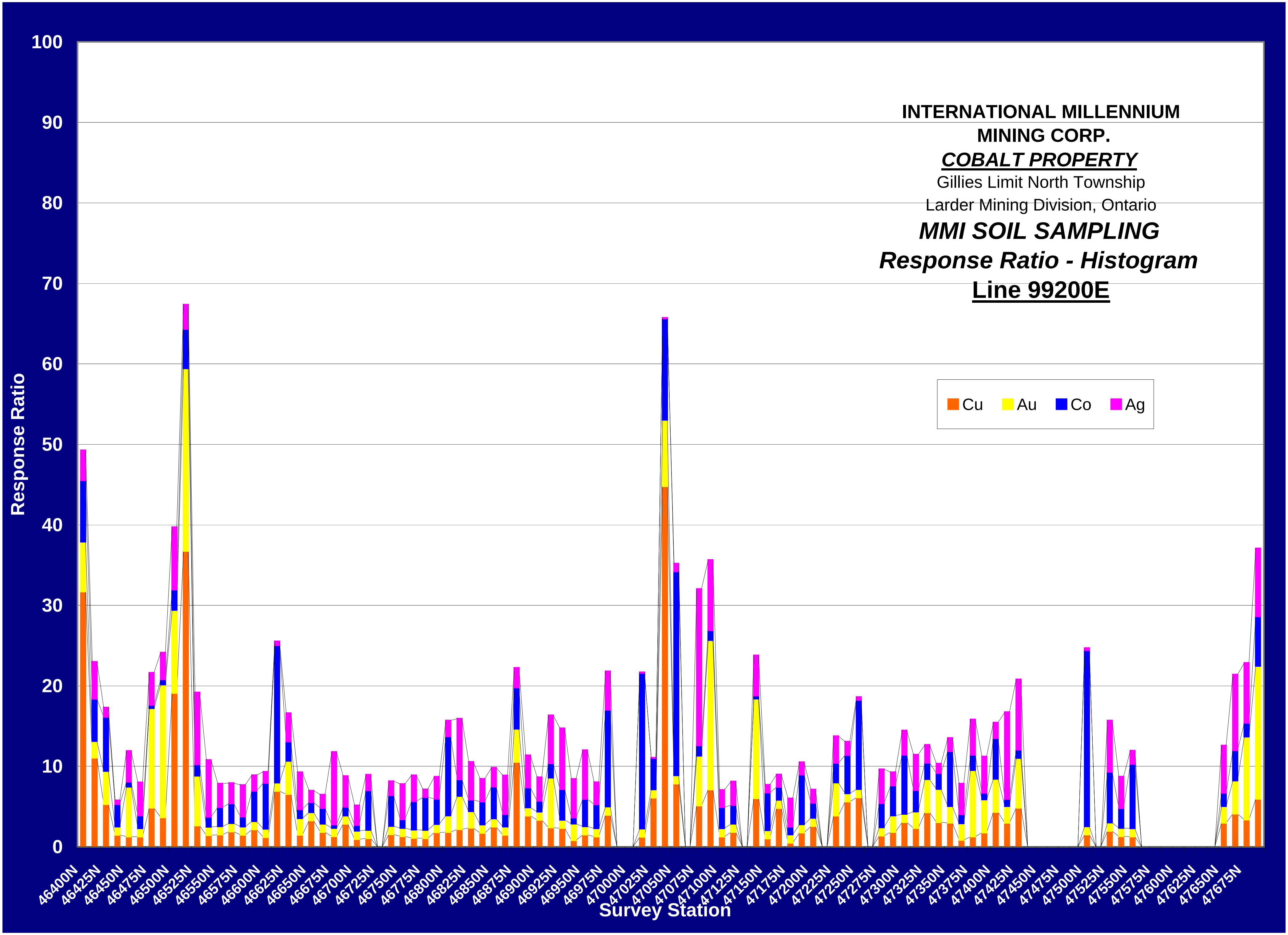
Drawn by:	Job No:	NTS:	Date:	Fig No:
DGM	07-03	31M/5	June 07	GC-3

Geotronics

GEOTRONICS CONSULTING INC
SURREY BC.



Data Reduced by : **GEOTRONICS CONSULTING INC.**



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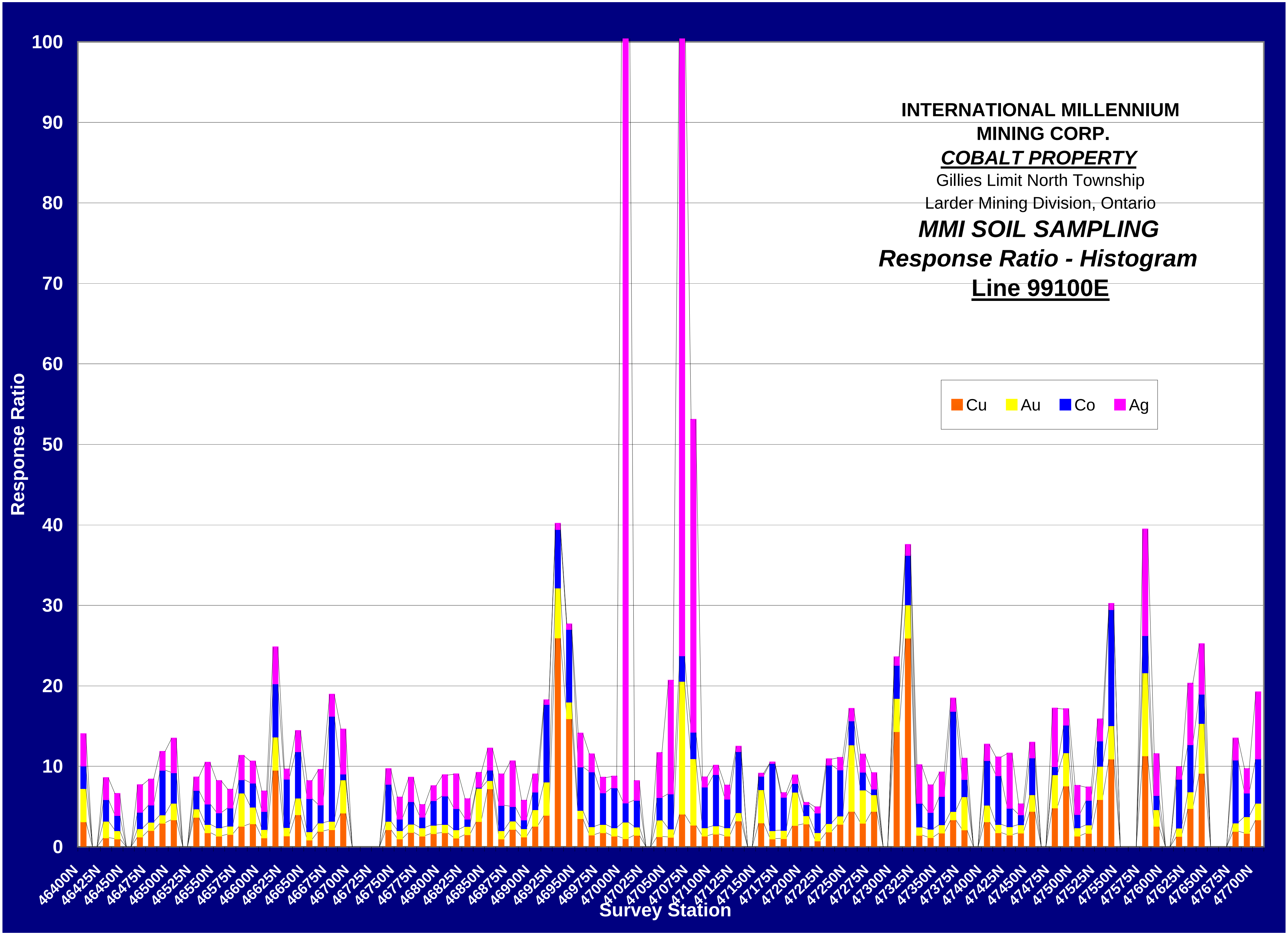

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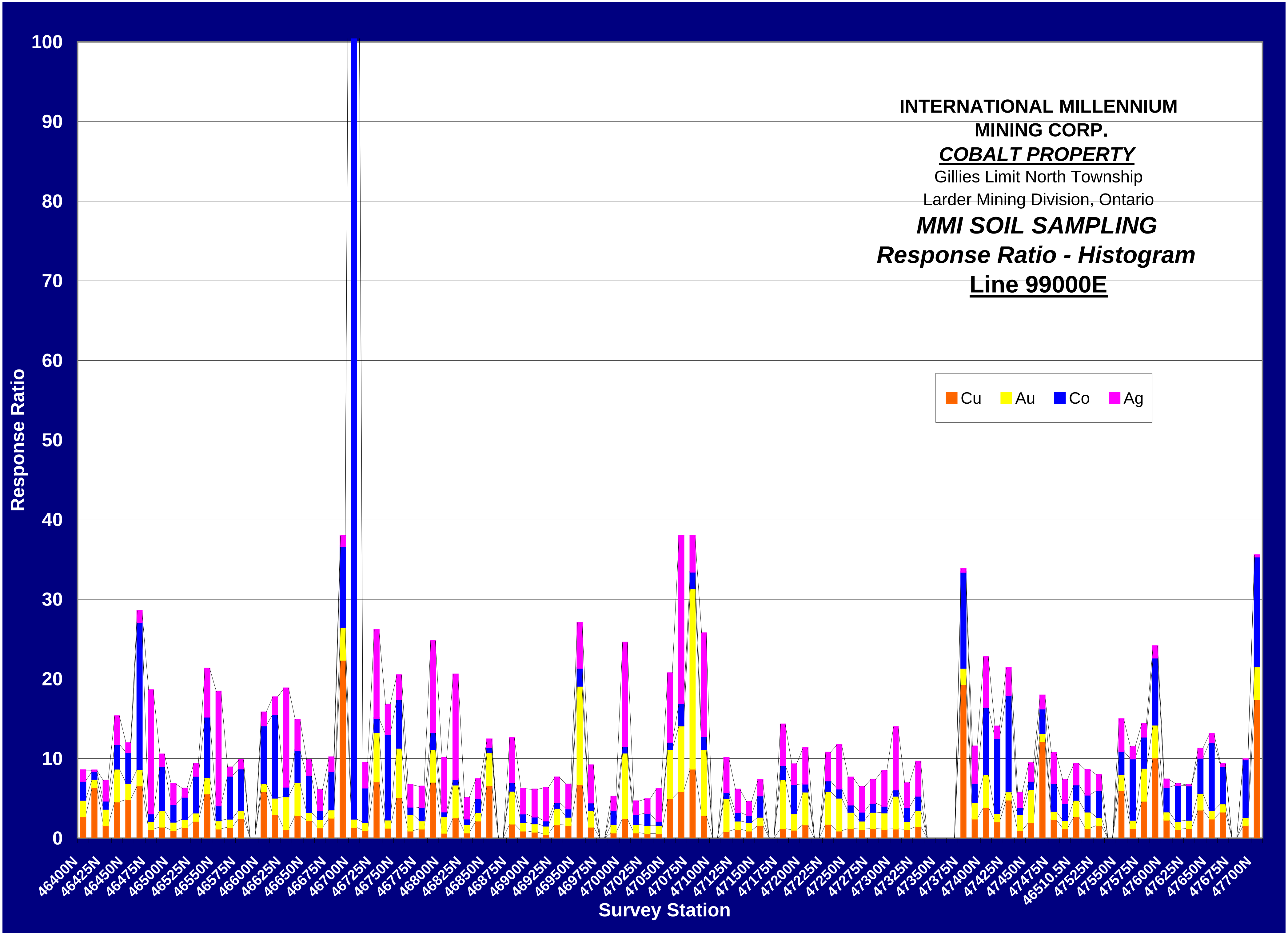

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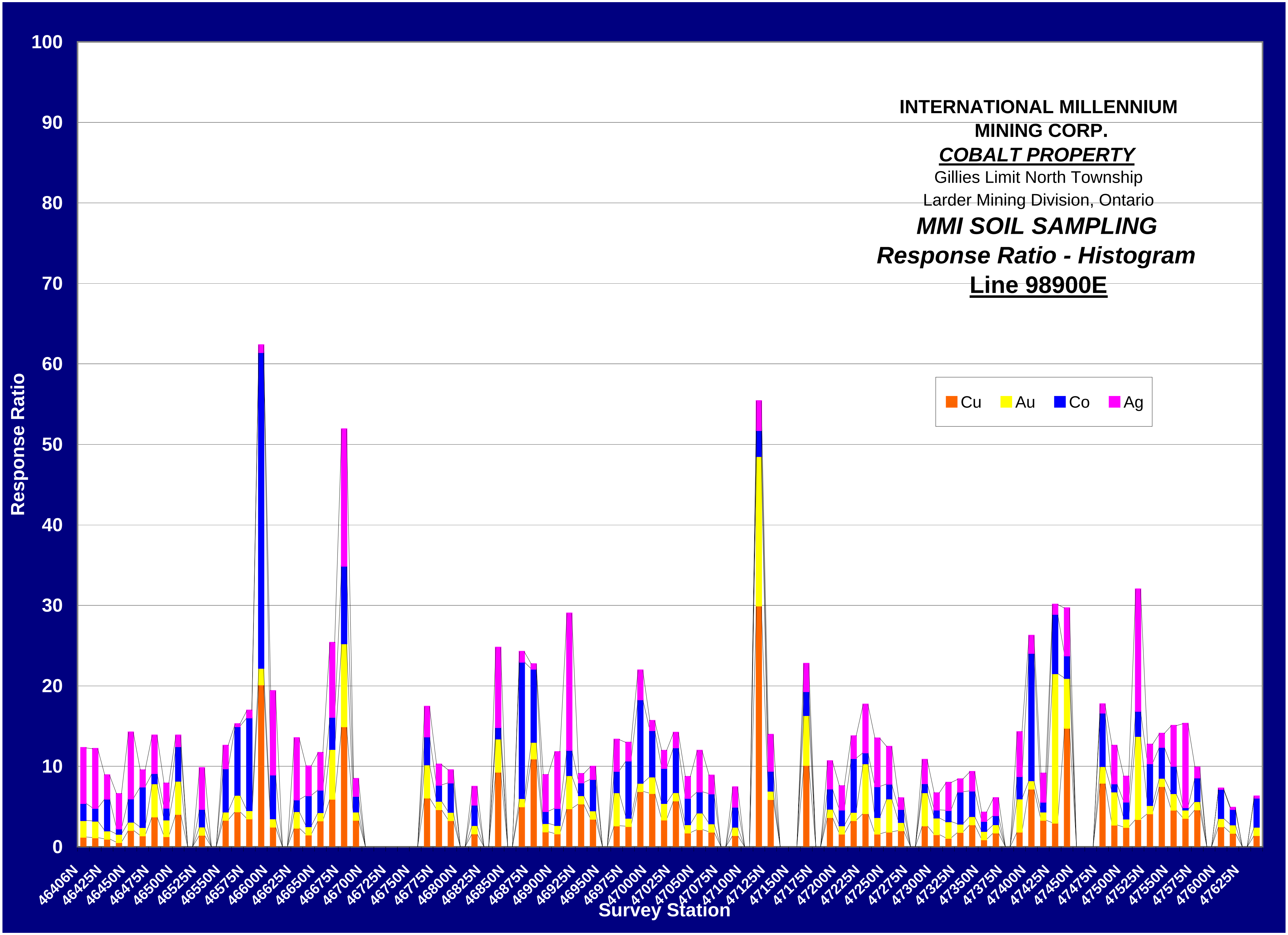

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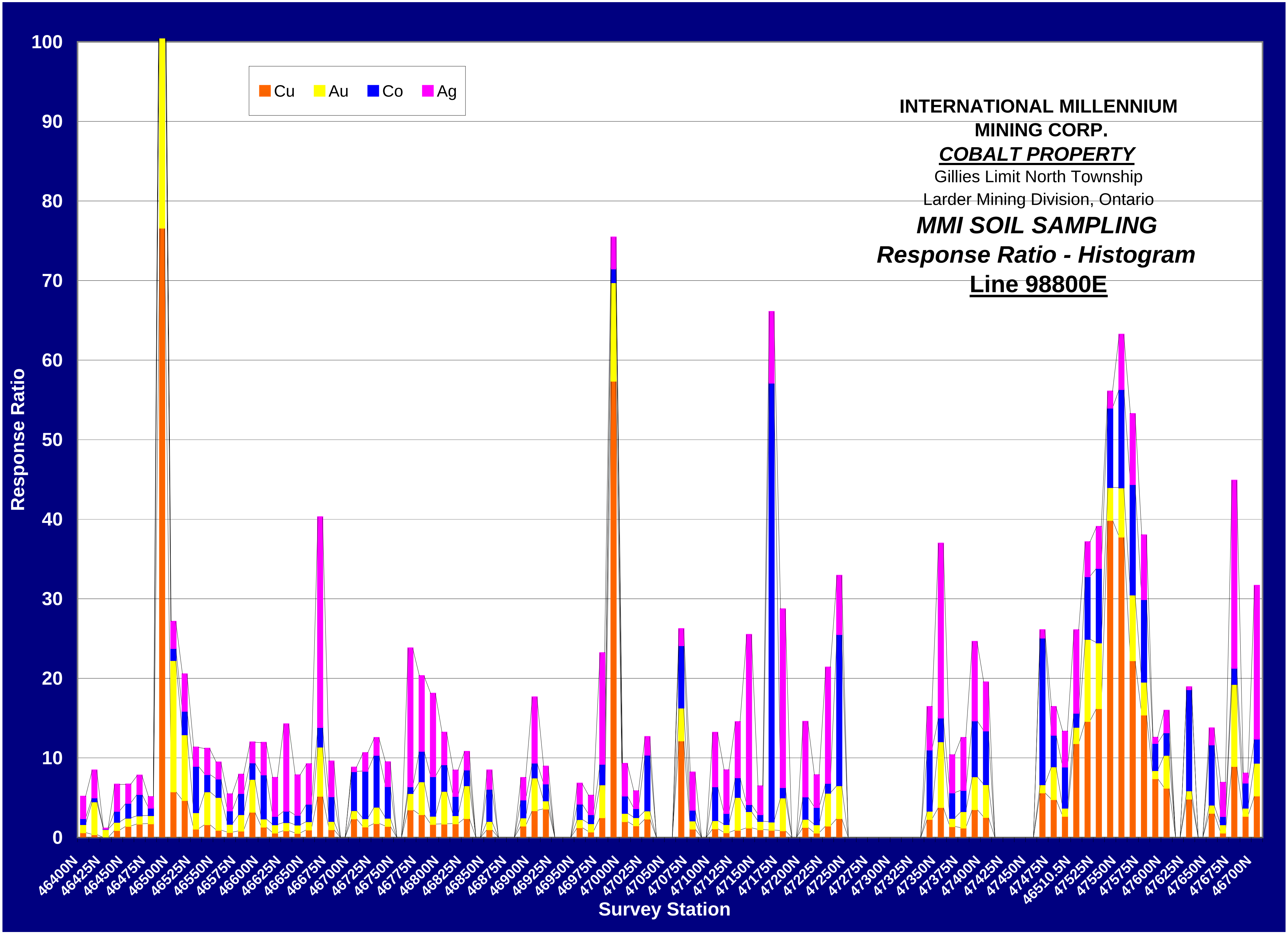

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