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# TECHNICAL REPORT of a GROUND GEOPHYSICAL SURVEY INDUCED POLARITY and RESISTIVITY over the CHUKUNI PROJECT COBALT, ONTARIO

Nov 16, 2020

Frank Santaguida, PhD., PGeo Vice President, Exploration

> Russell Johnston, BSc. GIT Project Geologist

First Cobalt Corp. 140 Yonge St. Suite 201 Toronto, ON M5C 1X6 Canada Main +1 416 900 3891 |info@firstcobalt.com

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# SUMMARY

This report was prepared and submitted by geoscientists employed by First Cobalt Corp., the parent company of Cobalt Industries of Canada Ltd., who hold the mining claim rights where the ground geophysical surveys (IP and resistivity) were conducted.

Haveman Brothers Forestry Services of Kakabeka falls was contracted to cut line for the ground geophysical surveys. A total of 37.1km of line was cut between November 20<sup>th</sup> 2018 and December 4<sup>th</sup> 2018.

Abitibi Geophysics of Val d'Or, Quebec, was contracted by First Cobalt Corp to conduct a ground geophysical survey on the Chukuni project in the Greater Cobalt project. The crew mobilized to site on December 5<sup>th</sup> 2018 and de-mobilized from site on December 19<sup>th</sup> 2018 for a total of 15 days, during which geophysical data was acquired from 27.825 line km.

The survey configuration was set up in a pole-dipole array with a TIPIX and IRIS Elrec-PRO transmitter and receiver. Full Description of the survey design and equipment are present in the Abitibi Geophysics report in appendix 1. The objectives of the survey were: 1) to identify any chargeable or resistive rocks which may be interpreted as high concentrations of metallic sulphide- or sulpharsenide minerals that may warrant further exploration, and 2) to identify chargeable distinct rock units which can be useful for geologic interpretation of rock units buried by cover or in un-mapped areas.

The Chukuni Project is located 16km south southeast of Cobalt and is accessible via Hound Chute Road, a maintained gravel road that can be accessed from Kerr Lake Road south of Cobalt.

A technical report written by Abitibi Geophysics is provided in the Appendix along with various geophysical maps generated from the data.

All spatial data contained in this report are in Universal Trans Mercator projection using North American Datum 83, Zone 17T.

The survey encountered variable chargeability and resistivity responses that correspond to bedrock geology. There are some anomalous zones of high chargeability on the eastern edge of the main grid. These have been recommended for follow up work.

# Location, Access, and Ownership

The Chukuni project is located within the Larder Lake mining division, approximately 16km south-southeast of Cobalt. The property covered by the survey is located in the southwestern edge of Lorraine Township.

The area covered is comprised of 21 active mineral exploration claims. The claims (see Table 1 for a list of claims and the amount of each claim covered by the survey grid) are held entirely (100%) by Cobalt Industries of Canada Inc. (a subsidiary of First Cobalt Corp.). Surface rights are held by the Crown.

This grid falls on provincial grid cells 31M04I042, 31M04I043, 31M04I021, 31M04I022, 31M04I023, 31M04I024, 31M04I001, 31M04I002, 31M04I003, 31M04I004, 31M04I005, 31M04I006, 31M05A381, 31M05A382, 31M05A383, 31M05A384, 31M05A385, 31M05A386, 31M05A363, 31M05A364, 31M05A365, 31M05A344, 31M05A345.

Access to the property from the town of Cobalt is by Hound Chute road via Kerr Lake Road. An unnamed bush road running east-west off Hound Chute Road runs through the property. Summer access is good, it is unknown if the road is maintained in winter.

Figure 1 shows the mining claims the grid lies on. Figure 2 shows the mining claim boundaries at the property scale.

Claim	Proportion covered by IP Grid
124517	0.33
336002	0.05
169636	0.7
217819	1.0
207601	0.5
171671	0.1
220389	0.8
265553	1.0
266698	1.0
265552	1.0
153004	0.25
286258	0.5
125809	1.0
274121	1.0
154249	1.0
117966	0.5
274279	0.7
102943	1.0
174545	0.4
219115	0.1
102944	0.3

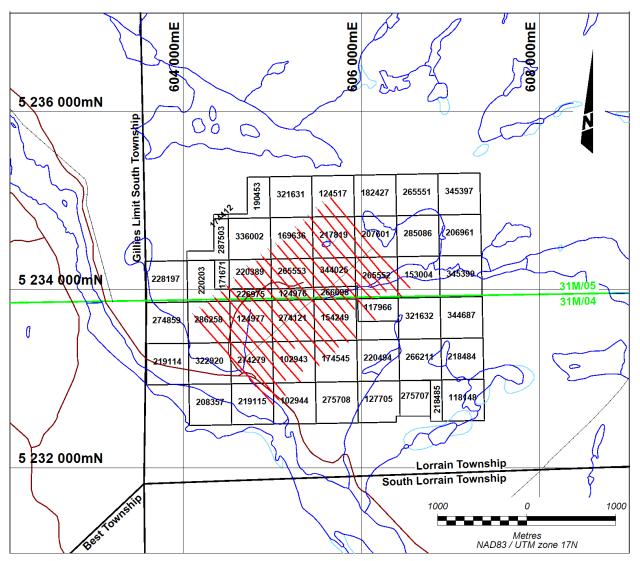


Table 1 – Mining Claims and the proportion covered by the IP grid.

Figure 1 – Figure showing the claims the grid lies on.

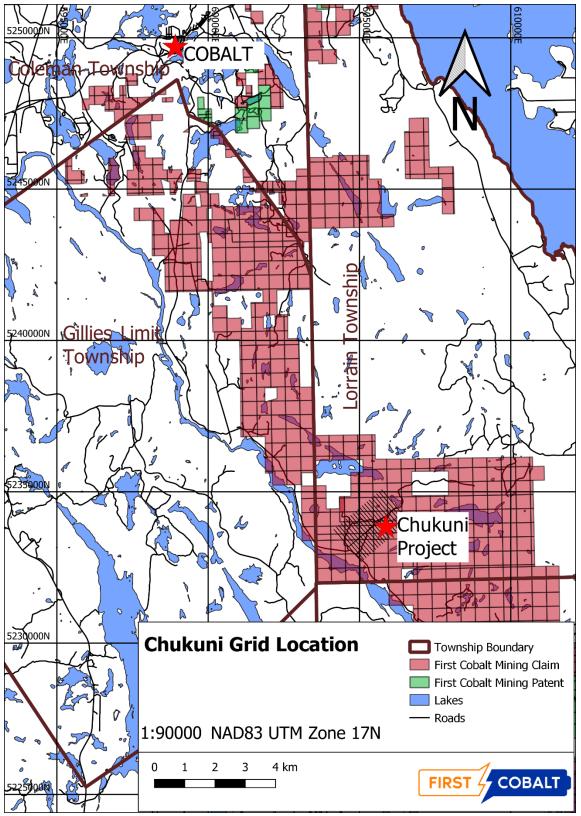


Figure 2 – Location of Chukuni Grid relative to Cobalt ON

# **Exploration Permit**

All claim blocks were permitted under permit PR-18-000182, which granted permission for line cutting, geophysical surveying with generators and diamond drilling.

# Property History and Previous Work

The first prospecting of this area likely began in the early 1900's or 1910's, during the major silver boom in the Cobalt camp, but no formal reports of the early work has been recorded. The earliest recorded work in the area is in the 1920's, with "Paul's Shaft" being sunk down to a depth of approx. 15m.

The first government mapping took place in 1909, with more detailed OGS mapping taking place in 1964 by R. Thomson.

Since then, the area has been explored repeatedly by several different exploration companies, typically focusing of prospecting, trenching, geophysics and drilling. Initially, the target for these exploration programs were the typical Ag-Co veins found in and around Cobalt. However, beginning with Cabo in 2000-2010 the area has been targeted for diamonds, focusing on the potentially diamondiferous lamprophyre dikes found throughout the area.

Year	Report	Operator	Description			
1973	31M04NE0004	Falconbridge Nickel Mines LTD	Mapping and Geochemistry on what is now the Chukuni property. No Anomalous Ag values were found, two drillholes were recommended			
1973	31M04NE0005	Falconbridge Nickel Mines LTD	Prospecting, EM surveying, mapping and geochemical surveying. Two joint sets correspond to major fault orientations in the area.			
1972	31M04NE0006	Aggressive Mines LTD.	VLF survey, with strong anomalies under lakes, and some sparse anomalies away from lakes.			
1973	31M04NE0007	Aggressive Mines LTD.	Diamond Drilling, No significant Ag-Co intersections			
1973	31M04NE0008	Aggressive Mines LTD.	Plan Map showing the location of trenches and drillholes on Chukuni			
2000	31M05SE2019	Cabo Mining Corp.	Prospecting for Lampyrophyre dikes and collecting overburden samples in search of diamonds. Numerous dikes found, but no results available at time of report.			
2000	31M05SE2021	Cabo Mining Corp	Adendum to report 31M05SE2019. UTEM survey of Pan Lake- Anderson Lake area. No significant anomalies are present.			
2000	31M05SE2022	Cabo Mining Corp	Report on mapping and prospecting in 1999/2000. They note sulphide zones containing up to 10% sulphide mineralization, and extensive trenching was noted.			
2000	31M05SE2023	Cabot Mining Corp.	Report on trenching and sampling on claim 1230446, with no significant Ag-Co values. Underlying bedrock is mostly archean pillowed mafic volcanics crosscut by syenites.			
2001	31M05SE2035	Cabo Mining Corp.	Report on stripping in 2001, with a focus on exposing lamprophyre dikes for diamond analysis. These were exposed in two areas.			
2002	31M05SE2040	Cabo Mining Corp.	Report focused on locating lamprophyre dikes and/or kimberlite and taking till samples where overburden was too deep for kimberlite indicator minerals. Elevated KIM's were present from Pan lake in a northeasterly direction			
2002	31M05SE2042, 31M05SE2043 31M05SE2050	Cabo Mining Corp.	Report on drill program focused on diamond exploration. Some microdiamonds were discovered.			
2010	20008472	Cabo Mining Corp.	Report on Prospecting and Stripping in 2009 focused on till sampling for diamonds.			

Table 2 shows a summary of work performed since 1970

Table 2 – Summary of work preformed in the Chukuni area.

# Geological Setting of Cobalt Camp and the Chukuni Grid area

Archean Keewatin rocks are the oldest rocks in the Cobalt Camp and form the southernmost portion of the Western Abitibi sub-province of the Superior Province (Ruzicka and Thorpe, 1996). These rocks include predominantly intermediate to mafic metavolcanic flows with minor intercalated metasedimentary rocks. The Archean rocks were folded and intruded by mafic to ultramafic dikes and granite stocks and batholiths. The eroded Archean surface is unconformably overlain by relatively flat lying Paleoproterozoic sedimentary rocks of the Huronian Supergroup which forms the mildly deformed Cobalt Embayment of the Southern Province. At the northeast edge of the Cobalt Embayment in the Cobalt area, the Huronian Supergroup rocks comprise only the Cobalt Group (Gowganda and Lorrain formations) and are commonly found filling interpreted paleo-valleys or troughs in the Archean basement. Early Proterozoic-age Nipissing Diabase intrudes both the Archean basement and the Huronian sediments. The Nipissing Diabase are the most abundant and widespread igneous rocks intruding the Huronian Supergroup sediments and occur as dykes, and sills up to several hundred metres thick. In the Cobalt area, the Nipissing diabase is interpreted as a thick undulating sheet intruding the Cobalt Group sediments at or immediately above the Archean unconformity (Lightfoot et al., 1993).

The arsenide silver-cobalt vein deposits in the Cobalt Camp are associated with Aphebian conglomerate, quartzite, and greywacke rocks of the Cobalt Group (Coleman Member of the Gowganda Formation, Huronian Supergroup), as well as with major sill-like bodies of Nipissing diabase and with Archean mafic and intermediate lavas and intercalated pyroclastic and sedimentary rocks. Distribution of the silver-cobalt veins in the Cobalt Camp is controlled by the contact between the Nipissing diabase sheets and the rocks of the Cobalt Group (Gowganda Formation) and to a lesser extent the unconformity between the Archean metavolcanic and the metasedimentary rocks (Andrews et al., 1986). The veins occur mainly in the Aphebian and Archean rocks and to a lesser extent within the Diabase and within about 200 m of their contact with the Diabase.

The Cobalt Camp is the type locality of arsenide silver-cobalt vein deposits (Kissin, 1992). First discovered in 1903, mining was most prolific to 1931 when silver prices were relatively high; making the town of Cobalt one of the first Canadian mining districts. Over one hundred mines were operated until 1989; also extracting nickel, cobalt, copper and bismuth. Veins contain a wide range of metallic arsenide and sulphide minerals within a carbonate mineral dominated gangue. Genesis of the deposits is not well understood but fluid chemistry and vein textures suggest a post-Diabase hydrothermal system infiltrated local deformation zones. The largest deposits occur as vein networks up to a km<sup>2</sup> in area.

Based on First Cobalt mapping, the Chikuni Property area contains the full stratigraphic extent of the Cobalt Camp. The area is poorly exposed, but the Archean mafic volcanic rocks are pillowed and well preserved allowing confident measurement of stratigraphic facing directions. Overall the Archean sequence dips steeply (>75 deg.) to 060E. Huronian Supergroup metasedimentary rocks are relatively flat lying but minor folding is also evident. The eastern portion of the Property is dominated by an Archean felsic intrusion cutting the volcanic rocks.

The Chikuni prospect is listed in the Ontario Mineral Deposit Inventory database as containing copper and gold. No visible mineralization was encountered in the field at Chikuni but several locations of sulphide mineralization and carbonate-quartz veining were prospected. Nearby, the Caswell prospect contains high cobalt-nickel; up to 9% Co in grab samples from underground material near the historic shaft.

Grid lines were cut at 100m spacing for a length of 1,400m over the ground deemed most prospective. Induced polarization and resistivity surveys were conducted on the grid. Bedrock chargeability anomalies are likely due to disseminated sulphide mineralization or as hosted in veins.

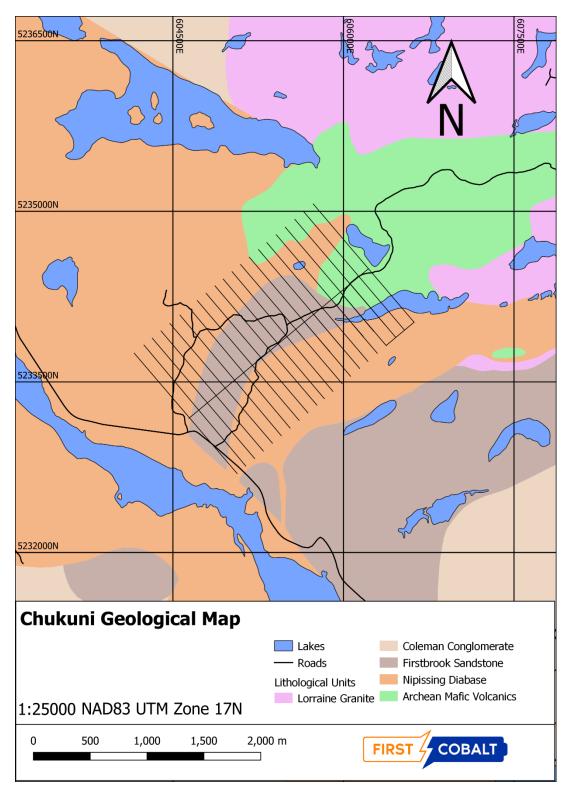


Figure 3 – Chukuni Geological Map

# Ground Survey Details

IP survey equipment and personnel mobilized to site on December 5<sup>th</sup>, and the survey began the following day. Demobilization was concluded on December 20<sup>th</sup> 2018. The survey was conducted over 15 days, during which 27.825 line kilometers were surveyed. For detailed information on survey specifications, see the report by Abitibi Geophysics which accompanies this report (Appendix A).

Jason Rickard represented First Cobalt Corp. during the data acquisition and data processing phases of this project. Survey specifications, such as IP line direction, orientation, and spacing, were determined by Frank Santaguida and Meghan Hewton. The survey grid was cut in a northeast-southwest direction (140°) with traverse line spacings of 100 metres (Figure 1), so that data collection would be oblique to stratigraphy and faulting rather than parallel to these features. Line spacing was chosen to detect a suitably sized conductive source that if related to metallic mineralization would be potentially economic for mining. Only one base tie line was cut. More information on the grid and survey is available in Figure 1.

Upon completion of the survey, final data processing was carried out by Abitibi Geophysics. Raw data was also sent to B-Field Geophysics (Brian Bengert) for further processing and review.

# Survey Results

Abitibi Geophysics provided First Cobalt with a survey report which describes the data acquisition, processing, and final presentation of the survey results in paper and digital formats (Appendix 1). The results of the survey are presented in maps and sections produced at scale of 1:5000 and 1:2500, in coordinate/projection system NAD83 Datum, UTM Zone 17N. The products are:

- 1) as chargeability, resistivity, calculated metal index and gold index plan maps at a depth of 50m and 100m depth each,
- 2) chargeability and resistivity cross sections on each line, and
- 3) 3D inversions of the area

These maps are appended to this report, and a complete list of available maps and data are provided in the appended report by Abitibi Geophysics. All results have passed QA/QC protocols set out by Abitibi Geophysics and validated by B-Field Geophysics.

A summary of the geophysical data is presented in Figures 4 and 5. Most of the zone contains low resistivity values, with Huronian Metasedimentary Rocks associated with topographic lows, associated with the low resistivity. Low resistivity values are often associated with topographic lows, potentially masking the resistivity responses of the bedrock. The regions with higher resistivity values are in the north and south, associated with diabase and Archean rocks, and a higher elevation. Change in geophysical signatures with depth is minor.

The overall chargeability response is low, but local high zones are consistent with the location of Archean metavolcanics rocks. The only area with a strong chargeability contrast is the eastern edge of the survey grid. Minor east-northeast trending chargeability zones are present in all areas of the survey.



Figure 4. Chargeability Map at 50m depth. Highly chargeable zones are present to the northeast edge of the survey area.

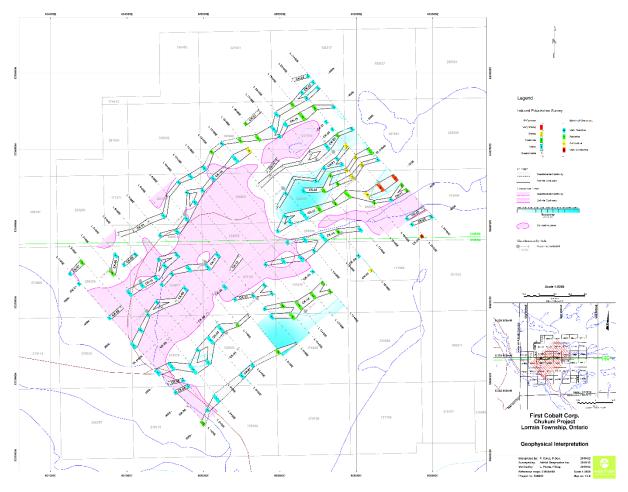


Figure 5. Geophysical interpretation of conductive and restive zones.

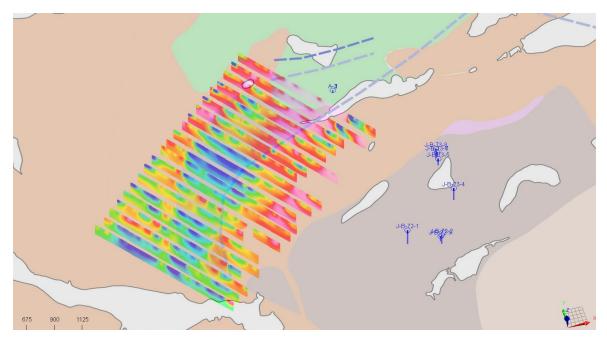


Figure 6. 3D inversion of the chargeability data overlain with geology and historic drill holes.

# Interpretation and Recommendations for Exploration

Both resistivity and conductivity show a contrast in the eastern portion of the survey grid, in the same area that the Archean volcanic rocks are exposed on surface. The trend in these regions is most likely directly correlated with the change in surface rock type. Additionally, the resistivity is significantly lower in areas of low elevation, suggesting that low, swampy terrain may be muting the resistivity response. The overall resistivity trend follows topography and bedrock type.

Chargeability is similarly strongest in the eastern portion of the survey grid, where Archean rocks are exposed on surface. Several weak northeast or east-northeast trending chargeability zones are present. These zones are often associated with magnetic lows, particularly apparent in the first vertical derivative.

Abitibi Geophysics produced a report recommending several zones for trenching and drilling. The proposed drill holes all target weak-moderate chargeability anomalies. These drill holes have an azimuth of either 140° or 320°, dipping either 50°-55° and all targeting the approximately 50°-230° trending chargeability anomalies. Recommended trenching zones are also over these chargeability anomalies. Full descriptions are in the report in appendix A.

The 3D inversion produced by Brian Bengert correlates strongly with the surficial geology model, with surface exposure of the Archean metavolcanics corresponding nearly perfectly with the subsurface IP highs. No historic drillholes are located over this survey grid.

The area is unlikely to yield a viable Ag-Co resource based on historic drilling and lack of a geophysical response.

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- Thomson, R. 1964. Cobalt Silver Area, Northern Sheet, Timiskaming District. Ontario Department of Mines, Map M2050, scale 1:12,000.

# Certificate of Qualified Persons

I, Frank Santaguida, Ph.D. P. Geo., residing in Whitby, Ontario, Canada, do hereby certify that:

1) I have personally prepared the Technical Report, reviewed the recommended interpretations, and approve of its contents.

2) I am the Vice President of Exploration for First Cobalt Corp. based in Toronto, Ontario at Suite 201, 140 Yonge Street M5C 1X6.

3) I graduated with an Honours B.Sc. and M.Sc (Earth Sciences) from University of Waterloo, Ontario in 1991 and 1994 respectively. I obtained my Ph.D. (Earth Sciences) at Carleton University, Ottawa, Ontario in 1999. I have practiced as a geoscientist continuously since 1991. I have worked on exploration and mining programs throughout Canada, Australia, Africa, Finland, and Sweden. I have extensive experience with both precious and base metals in various mineral deposit types and geological terranes.

4) I am a Practicing Professional Geologist registered with the Association of Professional Geoscientists of Ontario (APGO) since 2005, registration number, 0836

6) As of the effective date of the Technical Report, to the best of my knowledge, information and belief, this Technical Report contains all the scientific and technical information that is required to be disclosed to ensure the Technical Report is not misleading.

Toronto, Ontario, Canada

(Signed and Sealed) "Frank Santaguida"



November 16, 2020 Frank Santaguida, Ph.D., P. Geo.

> Vice President Exploration First Cobalt Corp.

# Appendix I Abitibi Geophysics Report



# INDUCED POLARIZATION SURVEY

LOGISTICS AND INTERPRETATION REPORT

#### PRESENTED TO



140 Yonge St., Suite 201, Toronto, Ont., Canada, M5C 1X6 c/o Mr. Jason Rickard, Exploration Manager





Lorrain Township, Ontario, Canada February 2019



Abitibi Geophysics, 1100 Russell Street, Thunder Bay, Ontario, P7B 5N7 Phone: 1.807.346.9254 Fax: 1.807.346.9257 tbay@ageophysics.com

Ref. No. 18N093



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### **1. RESEARCH OBJECTIVES**

The Chukuni grid (Figure 1) is found in the Cobalt Camp and is part of the Western Abitibi sub-province, of the Superior Province (Ruzicka and Thorpe, 1996). The Archean basement rocks found here are predominately intermediate to mafic metavolcanic rock flows, folded and intruded by mafic to ultramafic dikes, granite stocks and batholiths. The Archean rocks are unconformably overlain by the Huronian sediments. Early Nipissing Diabase are abundant in the area and intrude both the Archean and Huronian rocks as dikes and sills up to several hundred meters in thickness (Lightfoot et al., 1993).

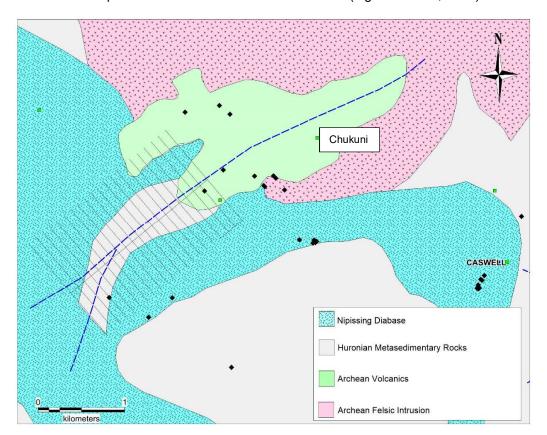


Figure 1. Bedrock geology of the Chukuni property, with geophysical grid lines and prospecting location (black diamonds) \*Geological information provided by First Cobalt Corp.

The Cobalt Camp is host to vein style arsenide silver-cobalt deposits (Kissin, 1992). The veins are associated with conglomerate, quartzite and greywacke rocks of the Cobalt Group, with sill-like bodies of the Nipissing diabase and with the Archean mafic and intermediate volcanic, pyroclastic and sedimentary rocks. They contain a range of metallic arsenide and sulphide minerals within a carbonate gangue. Vein distribution is controlled by the contact between the Nipissing diabase and the Cobalt Group rocks, and to a lesser extent the Archean volcanic and sedimentary unconformity (Andrews et al., 1986). Veins occur mainly in the Aphebian and Archean rocks and within 200m of their contact with the diabase. Deposit genesis is not well understood in the area but a post-diabase hydrothermal system infiltrating local deformation zones is suggested.

The Chukuni property is poorly exposed, making geophysical exploration an important tool on the property. The geophysical objective was to provide follow-up targets for exploration that are amenable to silver-cobalt vein style mineralization consistent with the known deposits in the region.

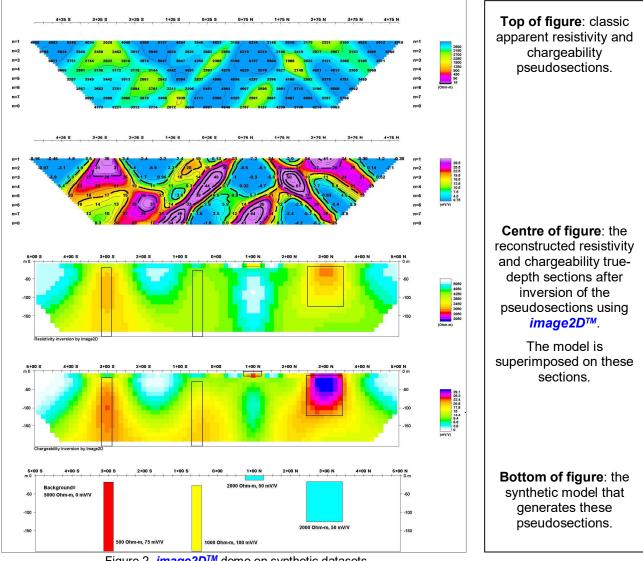
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FIRST	COBALL	GORP.

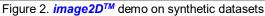


### 2. IMPLEMENTED SOLUTION

Cobalt mineralization can be a difficult geophysical target. Induced Polarization (IP) was chosen as a viable exploration method with the goal of observing a response from the metallic arsenide and sulphide mineralization associated with the carbonate dominated silver-cobalt veining.

A classic method of IP, in the pole-dipole configuration, was chosen with an 8 electrode and 25 m station spacing, providing an approximate depth of investigation in the 100 m range. For details about the survey configuration see Appendix B. Figure 2 below shows a synthetic example of the expected responses due to a variety of simple targets.







### 3. RESULTS OBTAINED

#### RESISTIVITY

Resistivity features have been interpreted by studying the apparent resistivity pseudosections, the *image2D*<sup>™</sup> true-depth sections and the intrinsic resistivity maps plotted at depths of 50 and 100 m.

High resistivity zones and low resistivity zones have been outlined in blue and pink respectively on the *Geophysical Interpretation Map (10.0)*. High resistivity zones are marked by values great than 7 500  $\Omega$ m and the low resistivity zones are marked by values less than 2 500  $\Omega$ m.

Much of the grid is dominated by low resistivity values, indicating the presence of conductive cover. The Hurionian Metasedimentary Rocks are found towards the eastern edge of the survey grid and centrally on the lines in this resistivity low region. This area is in a topographic low and the chargeability response over this region is also low, as seen on the *image2D<sup>TM</sup>* Chargeability Plan Maps (8.3). It's possible that the conductive cover could be masking the chargeability responses beneath. There is another weaker resistivity low trend in the southeastern corner of the survey grid that correlates with a small lake and river located here.

The regions displaying higher resistivity values are located towards the edges of the survey grid in the north and the south. These areas correlate with the Nipissing Diabase and Archean volcanic rocks. These areas are also where the topography is at it's highest, and bedrock is closest to surface. We see the strongest chargeability responses in these areas as well.

#### CHARGEABILITY

Following a detailed interpretation of the pseudosections and with the help of the recovered  $image2D^{TM}$  true-depth sections, a total of 39 chargeable sources were interpreted. These anomalies are illustrated on the *Geophysical Interpretation Map* (10.0).

We expect the silver-cobalt vein targets to have a weak chargeability response and that higher chargeability responses may be from disseminated sulphide mineralization of the deeper basement rocks.

The overall chargeability response on the Chukuni grid is low but reaches a maximum of 30 mV/V on L 21+00E, at the very eastern line of the grid. This high chargeable response is associated with source **CK-17**. Chargeable source **CK-17** and slightly weaker source **CK-22**, are consistent with the Archean volcanic rocks outlined in the *Geological Map (Figure 1)*.

The Hurionian Metasedimentary Rocks are found towards the eastern edge of the survey grid and centrally on the lines. These rocks and those on the periphery of this region are associated with the lowest chargeability response observed on the grid.

In reviewing the publicly available magnetic data (*Figure 4*) it is notable that many of the chargeable sources outlined on the Chukuni grid are associated with magnetic low trends. This could indicate that many of the chargeable trends are related to regions of alteration.

Several chargeable sources have been identified throughout the grid and follow up prospecting and drilling has been recommended where possible.



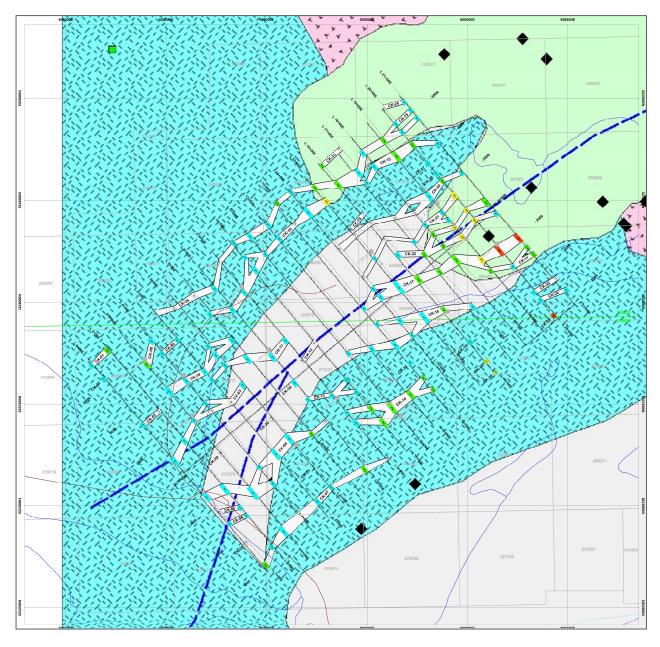


Figure 3. Interpretation Map showing chargeable trends and DDH follow-up recommendations with Geological Map



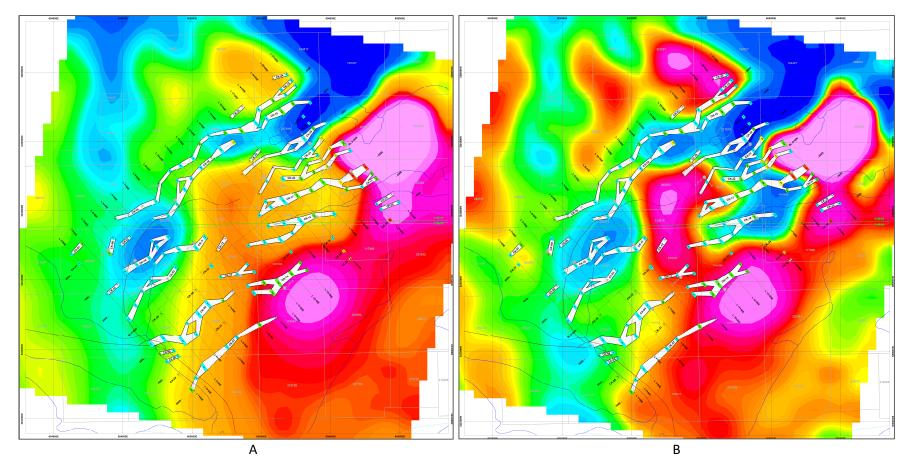


Figure 4. Interpretation Map showing chargeable trends and DDH follow-up recommendations with RMI (Residual Magnetic Intensity) grid (a), and with 1VD (1<sup>st</sup> Vertical Derivative) grid (b) \*magnetic data downloaded from the Geosoft public data server – 50m line spacing airborne survey\*



#### 4. RECOMMENDATIONS AND CONCLUSIONS

#### □ <u>Follow Up</u>

#### • SURVEY EXTENSION

This survey has identified interesting anomalies near the edges of the survey grid. Survey lines could be added in either the east or west directions to test the lateral extent of these observed trends.

Looking at the *image2D<sup>TM</sup>* Inverted Resistivity maps (8.2), we can see a large resistivity low region covering much of the grid that is associated with low land areas. Surveying those areas with a deep IP system such as Abitibi's *OreVision*<sup>®</sup> is also suggested to cut through the conductive cover and properly delineate the weak chargeable trends here, and to possibly bring out things that are not able to be seen with the current survey configuration. The table below lists the costs related to this.

Successful prospecting and DDH results for high priority targets increases the potential benefit of survey extension.

OreVision Survey (Deep IP)						
Region Configuration		Depth of km Investigation		Cost / km	Total	
Priority Zone	A = 25, n = 1-20	200 m	18	\$ 2,270	\$ 40,860	
Full Coverage	A = 25, n = 1-20	200 m	28	\$ 2,270	\$ 63,560	

#### Table 1. Budget for Geophysical Follow-Up

#### • **PROSPECTING / TRENCHING**

Table 2 below lists chargeable sources observed that appear to be close enough to surface (out-cropping or sub-cropping) for prospecting or trenching.

Many of the chargeable sources observed on the Chukuni grid are weak. These weak sources potentially outline areas where the bedrock appears closer to surface, with chargeability responses observed being due to disseminated bedrock mineralization. Before proceeding to the drilling stage, it is recommended that prospecting be carried out where possible.

#### o DRILLING

A drilling program has been recommended to test the targets outlined in this report. Table 3 below lists DDH coordinates, target locations and anomaly descriptions. The pages following this table are 2D, along line, images of the selected drill targets.



Source	L	Location of the Target			
(Priority_Source)	Line	Station	Depth Estimate (Max Top of Source)	Prospecting / Trenching Stations	
1_CK-03	1+00E	0+875N	50 m	0+25N – 1+00N	
1_CK-03*	3+00E	1+75N	50 m	1+50N – 2+00N	
		_			
1_CK-04	2+00E	1+75S	25 m	1+00S – 2+75S	
1_CK-04	3+00E	2+875S	25 m	2+25S – 3+25S	
1_CK-04	4+00E	3+25S	50 m	2+50S – 3+50S	
1_CK-04*	6+00E	2+125S	50 m	2+00S – 2+50S	
1_CK-04	7+00E	2+625S	25 m	2+25S - EOL	
1 CK-10	0.005	0.0051	05		
1 CK-10*	3+00E	3+625N	25 m	3+25N – 4+00N	
1 CK-10	4+00E	3+50N	25 m	3+00N – 3+75N	
1_CK-10	5+00E	3+125N	10 m	3+00N – 3+50N	
	6+00E	4+00N	25 m	3+75N – 4+00N	
1_CK-11	5+00E	2+625N	10 m	2+50N – 2+75N	
1_CK-11*	8+00E	1+50N	25 m	1+00N - 2+00N	
4 01/ 40	0,005		20 111		
1_CK-18	11+00E	0+75S	10 m	0+50S – 1+00S	
1_CK-18	14+00E	2+00S	25 m	1+75S – 2+25S	
1_CK18*	16+00E	2+00S	25 m	1+75S – 2+50S	
1_CK-21	20+00E	1+625N	50 m	1+50N – 1+75N	
1 CK-22	40,005	4.001	50		
1 CK-22*	18+00E	1+00N	50 m	0+75N – 1+25N	
1_CK-22	19+00E	0+50N	50 m	0+00N - 0+50N	
_	21+00E	0+375N	25 m	0+00N – 0+75N	
2_CK-08*	3+00E	5+50N	25 m	5+00N – 5+75N	
2_CK-08	4+00E	6+00N	25 m	5+50N – 6+50N	
2 CK-13*	0.005	4.0750	05		
2 CK-13	9+00E	1+875S	25 m	1+50S - 2+25S	
_	10+00E	2+50S	25 m	2+25S – 2+75S	
2_CK-16	8+00E	4+50N	50 m	4+25N – 5+00N	
2_CK-16*	9+00E	4+75N	50 m	4+50N – 5+00N	
2_CK-16	10+00E	5+25N	25 m	5+00N – 6+25N	
2_CK-16	11+00E	5+625N	50 m	5+25N – 5+75N	
2_CK-16	15+00E	5+75N	25 m	5+50N – 6+00N	
2 CK-20*	10,000	0.501	50		
2 CK-20	19+00N	2+50N	50 m	2+00N - 3+00N	
2_CK-20	20+00N	2+625N	50 m 50 m	2+50N – 3+00N 2+00N – 2+50N	
_	21+00N	2+25N	50 M		

#### Table 2. Prospecting / Trenching Targets on the Chukuni Project



Source		Location of the Targ		
(Priority_Source)	Line	Station	Depth Estimate (Max Top of Source)	Prospecting / Trenching Stations
3_CK-14 3_CK-14	9+00E 10+00E	3+00S 4+50S	50 m 50 m	2+50S – 3+25S 4+25S – 4+75S
3_CK-15 3_CK-15 3_CK-15 3_CK-15 3_CK-15 3_CK-15	10+00E 11+00E 13+00E 20+00E 21+00E	7+00N 6+75N 7+25N 6+25N 4+125N / 6+25N	10 m 25 m 25 m 25 m 10 m / 25 m	6+75N – 7+25N 6+50N – 7+00N 7+00N – EOL 5+75N – 6+50N 4+00N – 4+25N / 6+00N – 6+50N
3_CK-17 3_CK-17 3_CK-17 3_CK-17* 3_CK-17 3_CK-17 3_CK-17	14+00E 15+00E 19+00E 20+00E 21+00E 21+00E	0+875N 0+25N 1+50S 2+00S 3+25S 2+00S	50 m 50 m 50 m 50 m 25 m 25 m	0+75N - 1+25N 0+00N - 0+50N 1+25S - 1+75S 1+25S - 2+50S 2+25S - 3+25S 1+50S - 2+50S
4_CK-07 4_CK-07 4_CK-07 4_CK-07 4_CK-07	3+00E 5+00E 6+00E 8+00E	5+25S 5+25S 5+25S 5+25S 5+75S	25 m 50 m 50 m 25 m	4+75S – 5+50S 5+00S – 5+50S 4+75S – EOL 5+00S - EOL
4_CK-27	1+00E	6+25N	10 m	6+25N – 6+50N
4_CK-35	16+00E	5+375S	25 m	5+00S – 5+50S
4_CK-37	20+00E	3+75N	25 m	3+50N – 4+00N

#### Table 2. Prospecting / Trenching Targets on the Chukuni Project (continued)

EOL = End of Line

\* = DDH Target Location



#### Table 3. Drilling Targets on the Chukuni Property

DRILL HOLE		Loca	tion of the T	arget	Proposed DDH					
(Priority_ Source)	Type / Target Interest	Line	Station	Depth Estimate (to Center)	Station	Az.	Dip	Length	Figure	Page
1_CK-03	Weak chargeability target located within a wide resistivity low and topographic low. Trend is 500 $m$ in length and striking roughly <i>NE/SW</i> . Target is deep and open to the west. Direct association with an increase in resistivity potentially due to bedrock raise relative to surrounding low resistivity zone. Weak Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 3+00E	1+75N	25 m	2+00N X: 604629 mE Y: 5233445 mN	140°	55°	75 m	5	13
1_CK-04	Weak chargeability target located on the southern edge of a wide resistivity low and within a topographic low. Trend is 700 m in length and striking roughly NE/SW. Target is broad and deep and open to the west. Direct association with an increase in resistivity potentially due to bedrock raise through overburden. Moderate Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 6+00E	2+125S	75 m	2+50S X: 605149 mE Y: 5233302 mN	320°	50°	150 m	6	13
1_CK-10	Weak chargeability target located within a wide resistivity low and topographic low. Trend is 400 <i>m</i> in length and striking roughly <i>NE/SW</i> . Target is in the mid-depth range of the survey. Direct association with an increase in resistivity potentially due to bedrock raise relative to surrounding low resistivity zone. Weak Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 4+00E	3+375N	50 m	3+75N X: 604587 mE Y: 5233641 mN	140°	55°	100 m	7	13
1_CK-11	Weak chargeability target located within a wide resistivity low and topographic low. Trend is 400 <i>m</i> in length and striking roughly <i>NE/SW</i> . Target is broad and deep. Direct association with an increase in resistivity potentially due to bedrock raise relative to surrounding low resistivity zone. Weak Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 8+00E	1+50N	50 m	1+875N X: 605012 mE Y: 5233765 mN	140°	50°	100 m	8	14



#### Table 3. Drilling Targets on the Chukuni Property (continued)

DRILL HOLE		Location of the Target			Proposed DDH					
(Priority_ Source)	Type / Target Interest	Line	Station	Depth Estimate (to Center)	Station	Az.	Dip	Length	Figure	Page
1_CK-18	Weak chargeability target located in a topographic low. Trend is 600 m in length and striking roughly <i>E/W</i> . Target is broad and deep. Direct association with a resistivity high. Moderate Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 16+00E	2+00S	25 m	2+25S X: 605918 mE Y: 5233936 mN	320°	55°	75 m	9	14
1_CK-21	Moderate chargeability target located in a topographic high. Trend is 600 <i>m</i> in length and striking roughly <i>NE/SW</i> . Target is broad and deep. Target follows the northern edge of a high resistivity zone. Strong Gold Index target (high chargeability and high resistivity). Target for mineralization within a silicified or carbonatized zone.	L 15+00E	2+125N	75 m	2+50N X: 605521 mE Y: 5234248 mN	140°	55°	150 m	10	14
1_CK-22	Strong chargeability target located in a topographic high. Trend is <i>500 m</i> in length and striking roughly <i>NE/SW</i> , open to the east. Target is broad and deep towards the west and becomes narrower and more discrete towards the east, splitting into two limbs. Target is associated with a high resistivity zone. Strong Gold Index target (high chargeability and high resistivity). Target for mineralization within a silicified or carbonatized zone.	L 19+00E	0+00N	75 m	0+25S X: 605993 mE Y: 5234312 mN	320°	50°	150 m	11	15
2_CK-08	Weak chargeability target located in a topographic high. Trend is short, only $100 \text{ m}$ in length and striking roughly N/S. Target is in the mid-depth range of the survey. Direct association with an increase in resistivity. Moderate Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 3+00E	5+625N	25 m	5+625N X: 604394 mE Y: 5233721 mN	140°	55°	75 m	12	15



#### Table 3. Drilling Targets on the Chukuni Property (continued)

DRILL HOLE	Type / Target Interest	Loca	tion of the T	arget	Proposed DDH					
(Priority_ Source)		Line	Station	Depth Estimate (to Center)	Station	Az.	Dip	Length	Figure	Page
2_CK-13	Weak chargeability target located on the edge of a wide resistivity zone. Trend is 200 $m$ in length and striking roughly <i>EW</i> . Target is in the mid-depth range of the survey. Direct association with an increase in resistivity. Weak Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 9+00E	1+875S	25 m	2+125S X: 605351 mE Y: 5233530 mN	320°	50°	75 m	13	15
2_CK-16	Weak chargeability target located on the southern edge of a wide resistivity low. Trend is 800 m in length and striking roughly <i>NE/SW</i> . Target is broad and mid-depth. Direct association with an increase in resistivity. Weak Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 9+00E	4+875N	75 m	5+125N X: 604876 mE Y: 5234078 mN	140°	55°	125 m	14	16
2_CK-20	Moderate chargeability target located on the southern edge of a resistivity low trend. Trend is 700 m in length and striking roughly <i>NE/SW</i> . Target is deep and open to the east. Direct association with an increase in resistivity. Moderate Gold Index target (high chargeability and high resistivity). Target for disseminated mineralization within a silicified or carbonatized zone.	L 19+00E	2+50N	100 m	2+00N X: 605850 mE Y: 5234485 mN	320°	50°	150 m	15	16
3_CK-14	Moderate chargeability target associated with a resistivity high and located on a topographic high. Trend is 400 m in length and striking roughly <i>NE/SW</i> . Target is two discrete parallel trends that appear to become too close to resolve centrally along the trend. Strong Gold Index target (high chargeability and high resistivity). Target for mineralization within a silicified or carbonatized zone.	L 11+00E	4+25S	75 m	4+75S X: 605667 mE Y: 5233443 mN	320°	55°	150 m	16	16



#### Table 3. Drilling Targets on the Chukuni Property (continued)

DRILL HOLE (Priority_ Source)		Location of the Target			Proposed DDH					
	Type / Target Interest	Line	Station	Depth Estimate (to Center)	Station	Az.	Dip	Length	Figure	Page
3_CK-17	Strongest chargeability response on the grid, target located on the edge of a resistivity low and within a topographic low. Trend is $800 \text{ m}$ in length and striking roughly <i>E/W</i> . Target is broad and deep, open to the east. Strong Gold Index target (high chargeability and high resistivity). Target for mineralization within a silicified or carbonatized zone.	L 20+00E	1+875S	50 m	1+50S X: 606147 mE Y: 5234284 mN	140°	55°	125 m	17	17

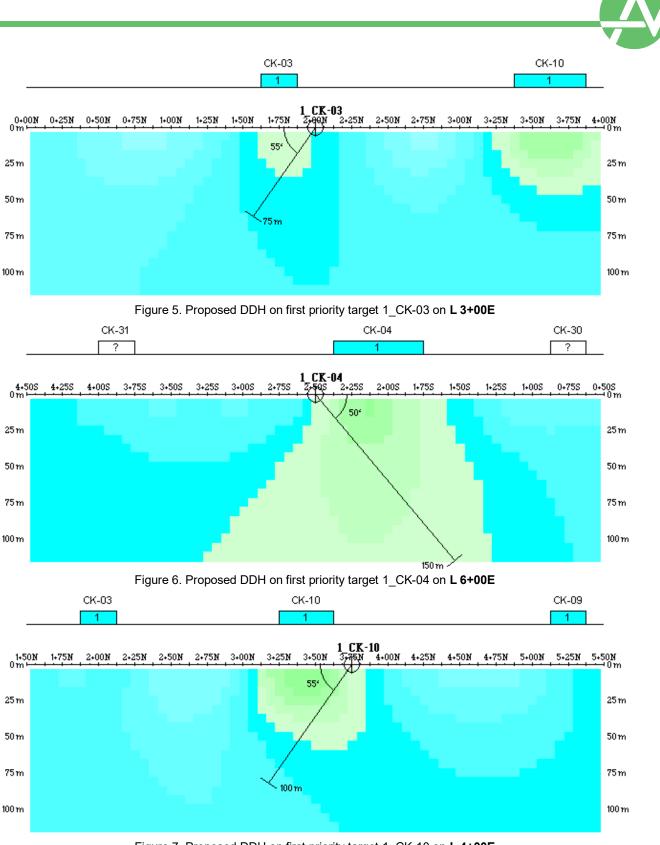
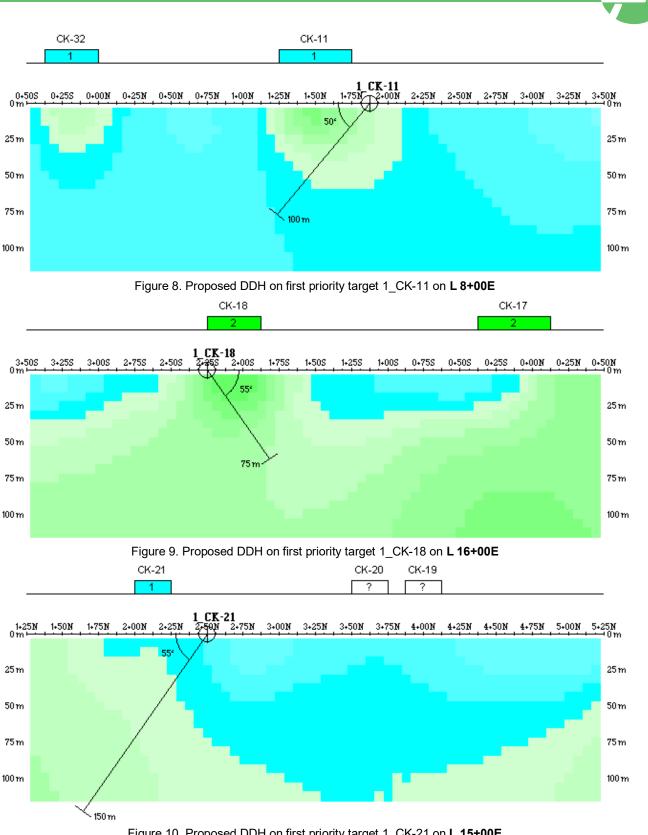
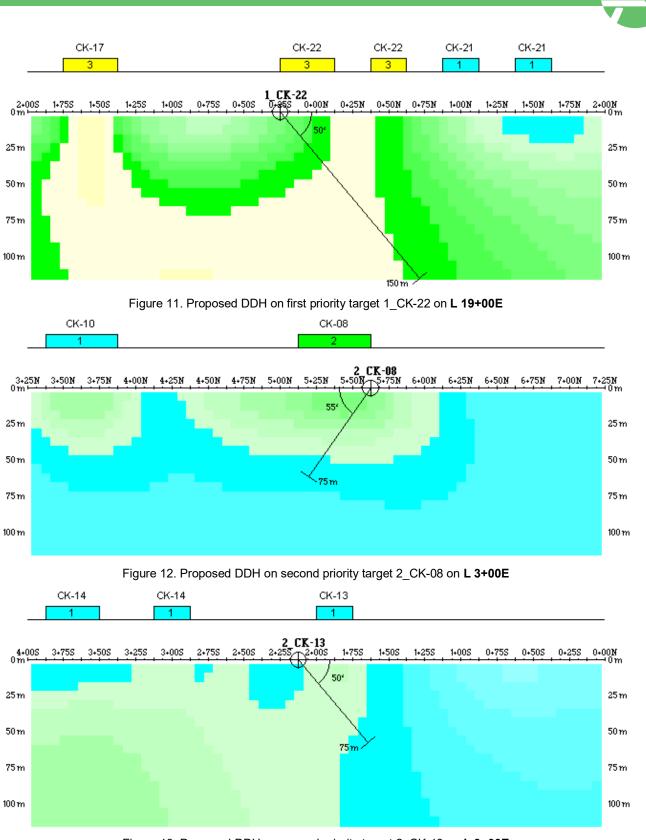
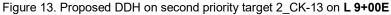
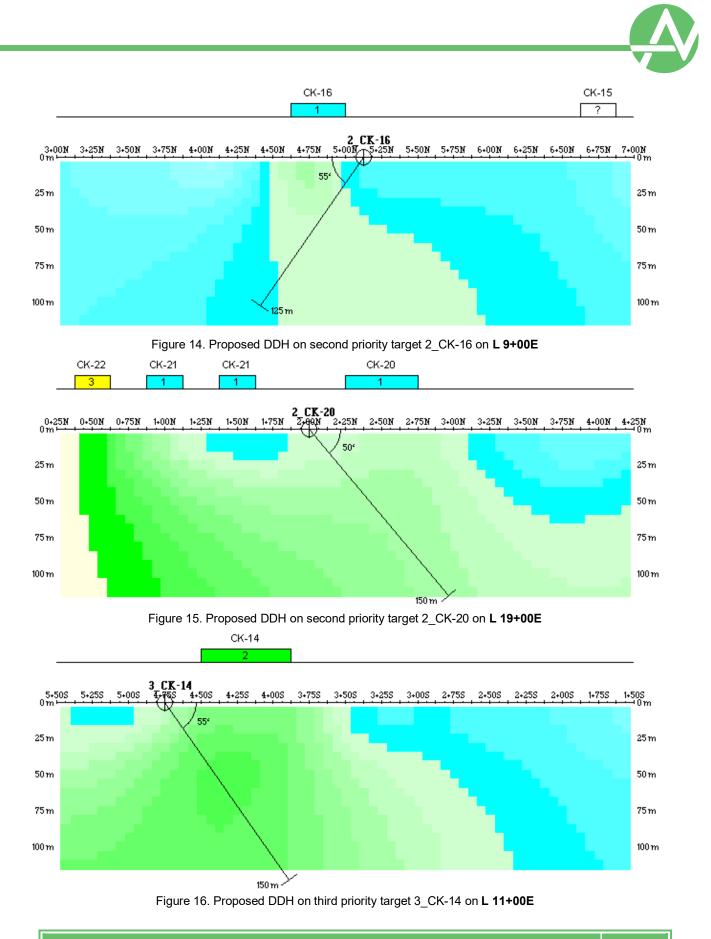


Figure 7. Proposed DDH on first priority target 1\_CK-10 on L 4+00E









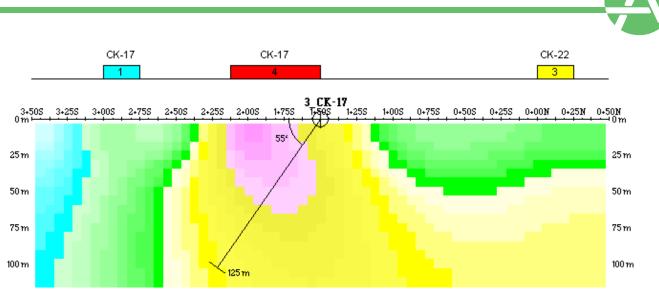


Figure 17. Proposed DDH on third priority target 3\_CK-17 on L 20+00E

The interpretation of the geophysical data embodied in this report is essentially a geophysical appraisal of the Chukuni Project. As such, it incorporates only as much geoscientific information as the author had on hand at the time. Geologists thoroughly familiar with the area may be in a better position to evaluate the geological significance of the various geophysical signatures. Moreover, as time passes, and data provided by follow-up programs are compiled, the priority and significance of exploration targets reported in this study may be downgraded or upgraded.

Respectfully submitted, Abitibi Geophysics Inc.



Pam Coles, P. Geo., Project Geophysicist APGO # 2612

PC/sl



## **Appendix A: Work Site**

- PROJECT ID
   Chukuni
   (Our reference: 18N093)
- LOCATION
   LORATION
   Lorrain Township, Ontario, Canada Centred on, 47°15'04" N and 79°36'33" W NAD83 / UTM zone 17N: 605 250 mE, 5 234 000 mN NTS sheets: 31M/04-05
- □ NEAREST SETTLEMENT Gillies Limit: 9 km NW
- ACCESS The Chukuni grid was accessed daily from Cobalt, via Hound Chutes road. From here the grid is to the east, accessed by smaller roads and trails.
- COORDINATE SYSTEM
   Local Datum: NAD83
   Projection type: Universal Transverse Mercator, (UTM)
   Zone: 17N

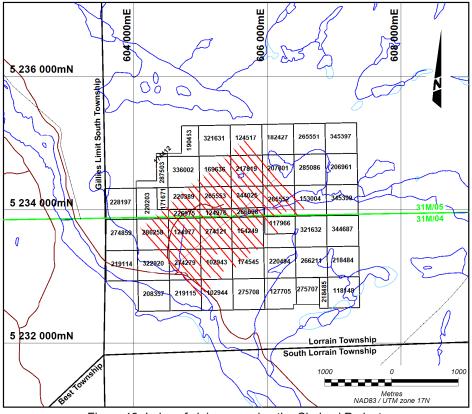


Figure 18. General location of the Chukuni Project

FIRST	$\mathbf{c}$	ALT	CODD
FIRST	COB	ALI	LURP



- □ GEOMORPHOLOGY The grid is located just south of Pine Lake and east of Montreal River. The survey grid itself is intersected by Anderson Lake in the southeast edge and had a trail spanning the entire grid. Topographic relief of the grid varies by approximately 120 m (265 385 m ASL).
- CULTURAL FEATURES
   There were no cultural features observed on the grid.
- □ *MINING LAND TENURE* The Chukuni property claims are wholly owned by Cobalt Industries of Canada Inc. The claim numbers encompassed in the present survey are illustrated in Figure 19.
- □ SURVEY GRID The grid on the Chukuni project consists of 21 lines oriented at 140°, with a line length ranging from 1125 m to 1400 m. There is one base line located at 0+00N.
- *ENVIRONMENTAL HEALTH AND SAFETY* AND SAFETY AND S







## **Appendix B: Data Acquisition**

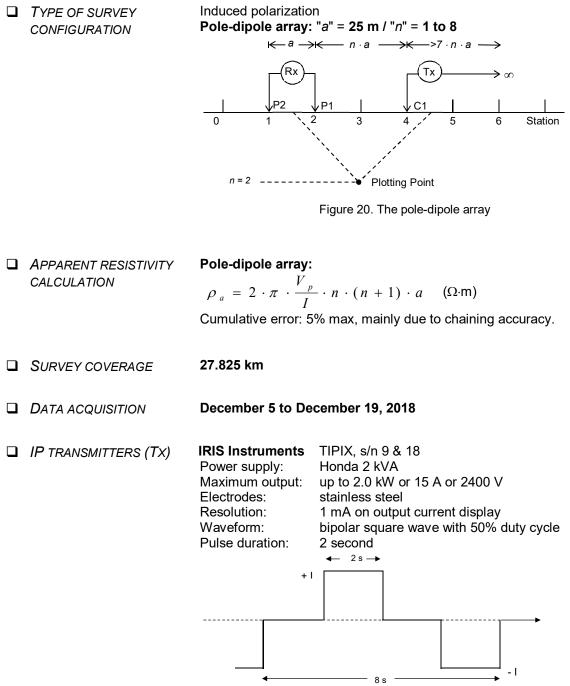


Figure 21. Transmitted signal across C1 – C2



#### □ IP RECEIVER (RX)

**IRIS Elrec-PRO**, s/n 104 & 184 with 10 input channels Electrodes: stainless steel

- **V**<sub>P</sub> Primary voltage measurement:
  - Input impedance:  $100 \text{ M}\Omega$
  - Resolution:  $1 \,\mu V$
  - Typical accuracy: 0.2%
- **M**<sub>a</sub> Apparent chargeability measurement:
  - Resolution: 0.01 mV/V
  - Typical accuracy: 0.4%
  - Linear sampling mode, 20-time slices ( $M_1$  to  $M_{20}$ ).
  - All windows are normalized with respect to a standard decay curve for QC in the field.

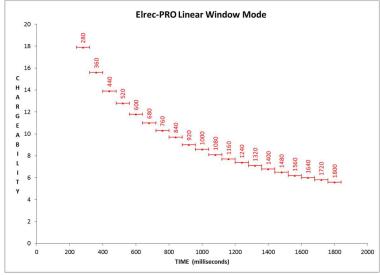


Figure 22. Linear windows (2 s pulse)

conformity

Personnel	Pierre-Olivier St-Onge, Anthony Lemoyne, David Paquin-Larivière, Zachary Paquin, Rémi Daoust, Carole Picard, Tech.,	Crew Chief, Operator Assistant Assistant Assistant Assistant Production of maps
	Pam Coles, P. Geo.,	Quality Control, Processing, and Report
	Langis Plante, P. Eng.,	Final verification of product



QUALITY CONTROLS
 (Records available upon
 request)

#### Before the survey:

- Transmitter & motor generator were checked for maximum output using calibrated loads.
- ✓ Receiver was checked using the Abitibi Geophysics SIMP<sup>™</sup> certified and calibrated V<sub>P</sub> & M signal simulator.

#### During data acquisition:

- ✓ Rx & Tx cable insulation was verified every morning.
- ✓ Proprietary Software Refusilo<sup>®</sup> allowed a daily thorough monitoring of data quality and survey efficiency.
- ✓ Enough pulses were stacked: 6 pulses for every reading.

#### At the base of operations:

- ✓ Field QCs were inspected & validated.
- ✓ Each IP decay curve was analyzed with Refusilo<sup>®</sup>. The few windows that were rejected were not included in the calculation of the plotted M<sub>a</sub>.



## **Appendix C: Processing and Deliverables**

TRUE-DEPTH IP SECTIONS
 POLE-DIPOLE

The pole-dipole, apparent resistivity and chargeability pseudosections were inverted using our proprietary *image2D*<sup>TM</sup> package. The process is fully automated as there is no need to guess a starting model or to filter the pseudosection to generate one. The ground is divided in cells of a/4 size and a back-projection of the raw data is performed.

The result is a smooth earth model showing all conductive, resistive and polarizable sources. The resulting true-depth sections integrate all possible solutions, highlighting the most probable ones.

A synthetic example showing the ability of  $image2D^{TM}$  to resolve sources and to facilitate the location of DDH is presented in Figure 2.

Table 4. Quality Statistics – Pole-Dipole

#### **QUALITY STATISTICS**

#### **Chukuni Project** Pole-Dipole array: a = 25 m / n = 1 to 8 10.07 kΩ Average contact resistance at the R<sub>x</sub> Average output current across C1-C2 439 mA 3578 mV n = 1 Average measured voltage Vp across $P_1-P_2$ n = 8 202 mV Observed windows found to fit a pure 99.63 % electrode polarization relaxation curve n = 1 0.06 mV/V Average deviation of the validated normalized windows with respect to n = 8 0.07 mV/V the plotted mean chargeabilities

□ ACCURACY CONCERNING image2D<sup>TM</sup>
Imaging cannot create information that is not in the raw data set (pseudosections), i.e., the limitations of the technique and array that was used will still prevail. With pole-dipole, for instance, resolution is asymmetrical and vertical sources may show a false dip. However, noise is efficiently rejected, near-surface effects are easily identified and complex responses, such as two adjoining sources, a wide body or a dipping geological contact, are well resolved.

This imaging process will not recover the intrinsic resistivity unless the source is very wide. However, as opposed to pseudosections, geological data from drill holes may be superimposed on *image2D*<sup>TM</sup> true-depth sections.



□ *METAL FACTOR* From the recovered resistivity / chargeability data set acquired from the *image2D<sup>TM</sup>* inversion, the Metal Factor has been calculated.

The Metal Factor was calculated as [(chargeability /  $\sqrt{resistivity}$ ) x 1000]. It highlights regions of low resistivity and high chargeability which are amenable to hosting disseminated sulphides associated with gold in sheared or faulted environments, and/or semi-massive to massive sulphide occurrences. Although the Metal Factor can be helpful in the search for conductive and chargeable zones, it should be interpreted with caution, particularly in areas with moderate background chargeability and variable resistivity, as a conductive zone with moderate background chargeability may yield a high. The resistivity and chargeability data should always be consulted prior to drawing any conclusions from the Metal Factor.

The Metal Factor Maps (8.4) display the results of this calculation.

□ GOLD INDEX From the recovered resistivity / chargeability data set acquired from the *image2D*<sup>TM</sup> inversion, the Gold Index has been calculated.

The Gold Index was calculated as (Chargeability<sup>2</sup> x Resistivity / 1000). It highlights regions of high resistivity and chargeability which are amenable to hosting disseminated sulphides associated with quartz veining or silicified/carbonatized alteration zones. Although the Gold Index can be helpful in the search for resistive and chargeable zones, it should be interpreted with caution, particularly in areas with moderate background chargeability and variable resistivity as a resistive zone with moderate background chargeability data should always be consulted prior to drawing any conclusions from the Gold Index. This technique does not highlight conductive, chargeable zones that may also be of interest.

The Gold Index Maps (8.6) display the results of this calculation.

DIGITAL DATA
 The maps are delivered in the Oasis Montaj map file format on
 DVD-Rom.

A copy of all survey acquisition data (ASCII text format) and processed data (Geosoft Montaj databases) are also delivered on DVD-Rom.



#### MAPS PRODUCED

Pseudosection plates and colour maps are bound or inserted in pouches at the end of this report. Our Quality Control System requires every final map to be inspected by at least two qualified persons before being approved and included within a final report.

#### Table 5. Maps Produced

Map Number	Induced Polarization Survey				
L 1+00E to L 21+00E (21 plates)	Pole-Dipole Colour Apparent Resistivity & Chargeability Pseudosections and <i>image2D</i> <sup>™</sup> True-depth Sections	1:2500			
8.2_50	<i>image2D</i> <sup>™</sup> Resistivity at a Depth of 50 m (Ohm-m)	1:5000			
8.2_100	<i>image2D</i> <sup>™</sup> Resistivity at a Depth of 100 m (Ohm-m)	1:5000			
8.3_50	.3_50 <i>image2D</i> <sup>™</sup> Chargeability at a Depth of 50 m (mV/V)				
8.3_100	<i>image2D</i> <sup>™</sup> Chargeability at a Depth of 100 m (mV/V)	1:5000			
8.4_50	<i>image2D</i> <sup>™</sup> Calculated Metal Factor at a Depth of 50 m	1:5000			
8.4_100	<i>image2D</i> <sup>™</sup> Calculated Metal Factor at a Depth of 100 m	1:5000			
8.6_50	<i>image2D</i> <sup>™</sup> Calculated Gold Index at a Depth of 50 m	1:5000			
8.6_100	<i>image2D</i> <sup>™</sup> Calculated Gold Index at a Depth of 100 m	1:5000			
10.0	Geophysical Interpretation	1:5000			



### COLOUR APPARENT RESISTIVITY & CHARGEABILITY PSEUDOSECTIONS AND *image2D*<sup>™</sup> TRUE-DEPTH SECTIONS WITH INTERPRETATION

# Appendix II Budgeting and Expenses

#### Chukuni IP-Res Expenditures

#### Technical Report of Ground IP/Res Geophysics Survey over the Chukuni Project

	DATES OF FIELD WORK							MNDM COST CATEGORIES							
WORK TYPE	PERSONNEL	ROLE / DESCRIPTION	From	То	Units	# Units	Rate/un	iit	\$5	Supervision & Labour	\$Contractors & Consultants	\$Supplies & Rental Equipment	\$Food and Lodging	personnel	ransport I/equip to work site
Supervision/Report Writing	Frank Santaguida	VP Exploration	2019-02-13	2019-06-30	day	3.00	\$	700.00	\$	2,100.00					
Supervision & Planning	Meghan Hewton	Project Geologist	2018-06-08	2018-09-03	day	5.00	\$	450.00	\$	2,250.00					
Supervision	Kevin Tateishi	Field Geologist	2018-11-28	2018-11-28	day	1.00	\$	400.00	\$	400.00					
Report Writing	Russell Johnston	Project Geologist	2020-11-19	2020-11-21	day	3	\$	400.00	\$	1,200.00					
Line Cutting	Haveman Brothers		2018-10-27	2018-11-06	km	31.70	\$1,	183.00			\$ 37,501.10				
Geophysics	Abitibi	Mob/Demob	2018-12-04	2018-12-21	day	2.00	\$3,	730.00			\$ 7,460.00				
Geophysics	Abitibi	Survey Set Up/Removal	2018-12-05	2018-12-20	day	2.00	\$3,	730.00			\$ 7,460.00				
Geophysics	Abitibi	Survey	2018-12-06	2018-12-19	km	27.83	\$2,	350.00			\$ 65,388.75				
Geophysics	Abitibi	Standby	2018-12-05	2018-12-06	day	2	\$3,	730.00			\$ 7,460.00				
Geophysics	Abitibi	ATV use (x3)	2018-12-05	2018-12-19	day	15.00	\$	270.00			\$ 4,050.00				
Geophysics	Abitibi	Report	2018-12-19	2018-02-09	flat rate						\$ 3,269.44				
Truck Rental	Enterprise	Truck Rental Enterprise	2018-11-28	2018-11-28	day	1.00	\$	54.43				\$ 54.43			
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	1		I	I	1	1	L		\$	5,950.00	\$ 132,589.29	\$ 54.43	\$-	\$	-
								TOTAL EXPENDITURES =					•	\$	138,593.72