2009 Exploration Assessment Report

Henderson Property - Raglan Hills Project

Raglan Township Claims (3006547, 3006548, 4247928, 4247929, 4247932)
Lyndoch Township Claims (4247930, 4247931)

By First Nickel Inc.

SUBMITTED TO: GEOSCIENCE ASSESSMENT OFFICE
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Date: December 6, 2010

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Project Summary

This is a summary report of the surface exploration work on 7 adjoining claims SO3006547, SO3006548, SO4247928, SO4247929, SO4247930, SO4247931, SO4247932 totaling 55 units in Raglan Township and Lyndoch Township, Renfrew County in south eastern Ontario. SO3006547 and SO3006548 are optioned from Melkior Resources Inc. – known interchangeably as the "Henderson or Melkior Option" with First Nickel Inc. FNI can gain an 80% undivided interest in the claims by work expenditures totaling a set amount over 2 years.

Exploration for nickel – copper - PGE sulphides on the Henderson Option by the operator First Nickel Inc. (FNI) began in August and continued to late November 2009. A total of 44 field samples were taken, 26 sent to SGS Labs in Toronto for analysis. Two lines each one kilometer were picketed every 25m and labeled by a local surveying contractor using a differential GPS with accuracy to less than 50cm. Crone Geophysics & Exploration Ltd., performed a surface pulse electromagnetic surveys on the lines at the 25m and 50m stations using 1 loop during Nov. 26-29, 2009.

Surface geophysics and sampling was focused on the results of the 2008 AeroTEM III airborne geophysical survey contracted out by FNI. The electro-magnetic (AEM) anomalies and locally coincident magnetic anomalies were targeted. A field logistic report was received on Jan. 5th, 2010 from Crone Geophysics. Line Profiles were received and depict anomalous areas requiring follow-up work. A geophysical interpretation report was received on April 12th, 2010. Field activities on the project also included prospecting, claim post inspection, GPS surveying.

A total of 26 assays (including 1 standard, 1 blank, and 1 pulp duplicate for quality control) were sent for analysis of Ni, Cu, Co, S, Au, Pt, Pd, Ag. All of the data except the pulp duplicates have been received to date. No significant assay results have been received. The trace pyrrhotite –pyrite sulphides are generally barren of nickel to date and all less than 0.01% Nickel and <0.03% Cu.

The local Algonquins of Ontario representative was approached and the property was discussed in reference to our exploration program to avoid any Indian Burial site, wildlife or plant concerns. Due to our non – destructive grid lines where only pickets and flagging were used (no tree cutting) the telephone discussion ended and further site review was not needed at this time. In future, if drilling is recommended the representative will be taken out to review our location of drill sites before work commences.

No medical aids or lost –time accidents occurred from company personnel or contractors on the total scope of exploration field work.

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Introduction

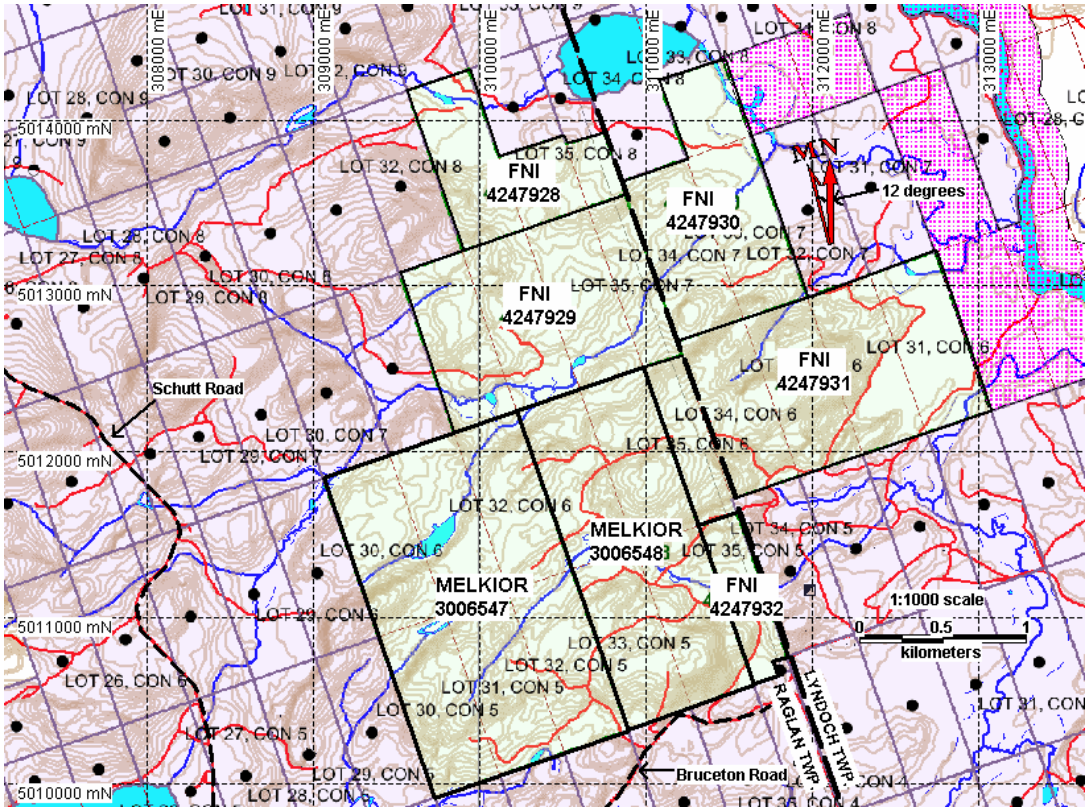
In 2009 a recommendation was made to First Nickel Inc. (FNI) corporate office to option or JV the property held by Melkior Resources Ltd. (Melkior) for the nickel – copper – PGE potential on the two claim units known as the "Henderson Property". First Nickel Inc. signed a Property Option Agreement July 31, 2009 with Melkior for the 2 claim unit property in Renfrew County, in south eastern Ontario.

This report is a summary report of the prospecting and ground geophysical exploration work mainly on 2 adjoining claims in Southern Ontario: SO3006547 and SO3006548 totaling 20 units optioned from Melkior Resources Ltd – named the "Henderson Option", and the five FNI staked claims (4247928 to 4247932) that are not included in the option agreement (refer to Figure 1 and Table 1) for a total of 55 units. First Nickel has filed this report with the Ministry of Northern Development, Mines and Forestry – Geoscience Assessment Office for assessment credits to keep the claims in good standing.

Access is by paved road approximately 40 km northeast of Bancroft, Ontario on Hwy 28, turning north on Bruceton Road, a gravel road. The Henderson property is north of Bruceton Road crossing private property and access by foot or ATV must be agreed upon by the property owner.

[1]The geological formations in this area are of Precambrian age. Rock units include metamorphosed sediments, crystalline limestone, dolomites, paragneiss and amphibolites (all considered Grenville age). Laurentian and Algoman intrusives intrude the sedimentary structures. These intrusives range from granites and syenites to gabbros to basic pyroxenites. Age classification is difficult due to the highly folded, contorted and metamorphosed nature of the sediments.

Figure 1 – Property Location Map – Raglan and Lyndoch Claims
Source: MNDMF Claims Map – January 2010.



[1] Summary on Henderson Uranium Mines Limited, Raglan and Lyndoch Twp., County of Renfrew, Ontario, By J.J. Harris, M.Sc, P.Eng, May 26, 1958.

Past Work – (OGS –Google source)

1954: Stripping and trenching by Henderson Uranium Mines Limited.
1956: Geological, scintillometer and magnetometer surveys, and blasting and stripping by Geo-Technical Development Company Limited on the Henderson Uranium property.
1958: Geological, Geiger and scintillometer surveys, and four drill holes totaling 161 feet by J. J. Harris.
1968: Some trenching and drilling of 11 holes for 3,085 feet by Merland Oil Company of Canada Limited. (MDC 23, p126).
2007: February 12, Melkior staked the two claims for uranium potential after review of past work.
2008: Melkior Resources filed assessment work consisting of prospecting, power stripping and assaying.

Melkior Resources Inc. (extracted from company website)

Highlights: **Metals of interests:** Uranium; **Ownership:** 100 % Melkior; **Location:** 14 km northwest of the town of Denbigh – Accessible by road all year-round; **Surface area:** 20 claims covering a total area of 4.14 km2

- High scintillometer readings through-out the property in pegmatite dykes and sills
- High grade grab samples with values up to 0.83% U3O8
- Evidence of faulting and shear zones, controlling structures of the pegmatite intrusions.

Melkior News Release Ottawa, August 4, 2009 - Melkior Resources Inc., (MKR-TSX-V) has signed an agreement with First Nickel Inc., ("FNI") whereby FNI has the right to earn up to 80% on Melkior's 100% owned Henderson property located in Raglan Township in southeastern Ontario.
FNI can earn 50% by spending $60,000 on exploration. At the 50-50 point Melkior will decide whether or not to participate. If Melkior doesn't participate FNI can earn up to 80% by spending an additional $100,000. At the 80% point Melkior will participate or dilute to a 1.5% NSR Royalty.
FNI is exploring for copper nickel in the region and considers the Henderson property to hold exploration potential for copper-nickel sulphide deposits. Melkior originally staked the property for its uranium potential and Melkior retains a 100% interest in uranium and other radioactive minerals that may be located on the property. Melkior has the right to explore for these minerals at its cost independently of any work by FNI.

Table 1: Claim Details (SO – Southern Ontario)

Company	Claims (SO)	Township	No. of Units	Lots, Con
Melkior	3006547	Raglan	12	Lots 30, 31&32, CON 5&6
	3006548	Raglan	8	Lots 33&34, CON 5&6
FNI	4247928	Raglan	4	Lot 33+ pt s1/2 L34 & 35, CON 8
	4247929	Raglan	10	Lot 32, 33, 34 & 35, Con 7
	4247930	Raglan	7	Lots 33, 34 Con 7+s1/2 Lot 33, Con 8
	4247931	Raglan	12	Lots 31, 32, 33, 34 & 35, Con 6
	4247932	Raglan	2	N1/2 & Pt of S1/2 Lot 35, Con 5

Exploration Traverses and Sampling, Grid Lines

A total of 24km of prospecting and sampling traverses were completed over the property during August to November 2009. Surface sampling was focused on the results of the 2008 AeroTEM III airborne geophysical survey contracted out by FNI. The electro-magnetic (AEM) anomalies and locally coincident magnetic anomalies were targeted.

Field activities included 5 days of prospecting with 2 geologists locating various new outcrops and those previously stripped and washed by Melkior. A total of 44 field samples were taken from the Henderson claims, 26 were sent to SGS Labs in Toronto for analysis. The other samples taken were duplicate rock types with generally nil visible sulphides. Access to the outcrops was by an ATV or walking and samples were taken with a hammer / sledge. Samples were described in the field and a representative sample was collected for each site. Refer to Figure 2a to 2d and 3 and Table 2, for sample locations and Appendix 1 for the description of the samples.

Two lines each one kilometer were picketed every 25m and labeled by a local surveying contractor using a differential GPS with accuracy to less than 50cm. An FNI crew of two persons completed the two ends of the grid lines due to non- availability of the differential GPS and survey crew.

Field activities on the project also included prospecting, claim post inspection, GPS surveying (see Appendix 2 &3).

Surveying Lines and Surface Geophysics

Surveying services were contracted out to P.A.Miller Surveying Ltd. (Miller), from Stirling, ON for field layout of two – 1000 metre picketed (every 25m) parallel lines separated 150 metres apart. Leica dual frequency 1200 receivers, with both radio and cellular links were used. Since there is no cell phone service in the area of interest, Miller sent a single crew member in to perform recon and establish a pair of base points. The base points would be post processed using the NRCan PPP service. This provided us with about 0.02 absolute accuracy in horizontal and 0.03 in vertical. These values are in NAD83 (CSRS). This work was performed and completed by Nov.27th. 2009.

First Nickel provided a field crew of two persons to complete the last 2-3 stations on each line where the base station could not reach the DGPS. This was done by chaining the 25m distance and using the hand held GPS, and by eyeing the straight line.

Crone Geophysics surveyed the two surface lines using the Crone Pulse EM system. It is a time domain electromagnetic method in which a precise pulse of current with a controlled linear shut off is transmitted through a large loop of wire on the ground and the rate of decay of the induced secondary field is measured across a series of time windows during the off-time. The electro-motive force (EMF) created by the shutting-off of the current induces eddy currents in nearby conductive material thus setting-up a secondary magnetic field. When the primary field is terminated, this magnetic field will decay with time. The amplitude of the secondary field and the decay rate are dependent on the quality and size of the conductor.

Crone laid the loop on November 26, 2009 and then surveyed the two lines to Nov. 28th and de-mobed Nov. 29th.

Refer to Appendix 6 for their Logistics Report and profiles.

Results - Geology and Assays

Surface grab sample assay results are summarized in Appendix 4.

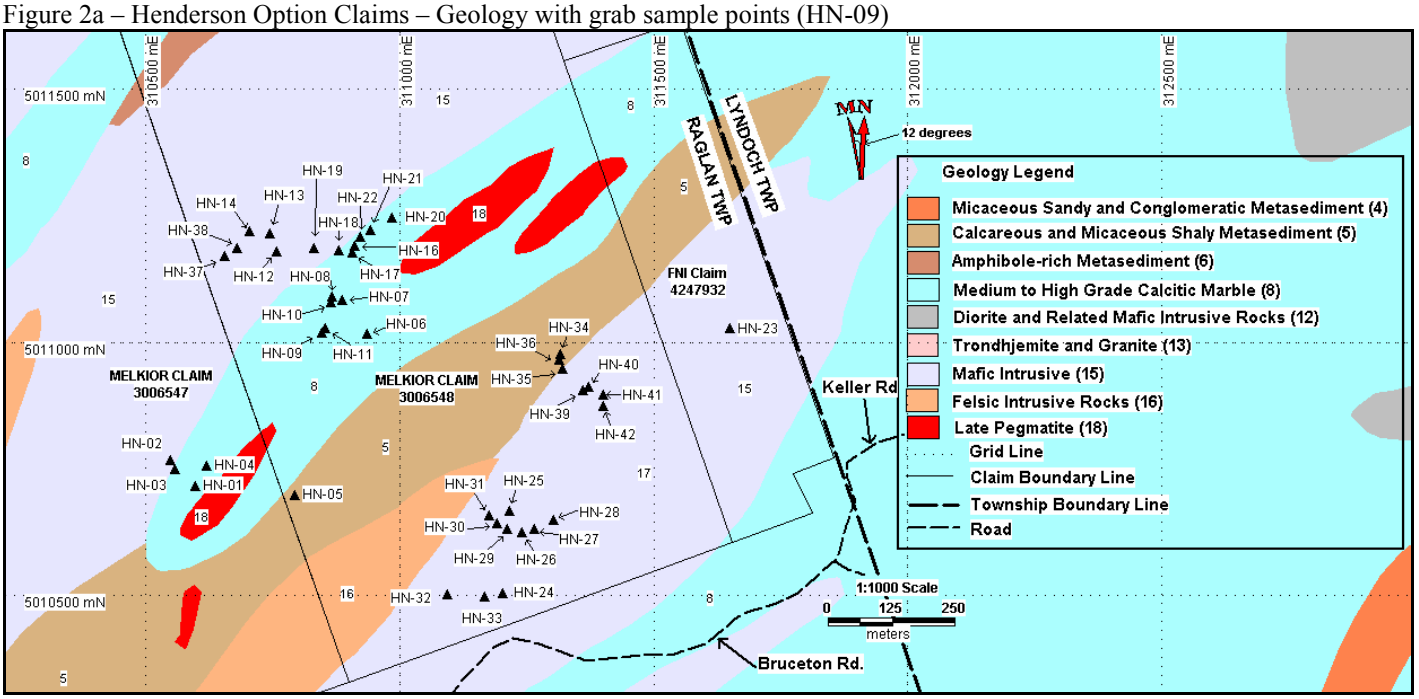
A total of 26 assays, (including standard, blank, lab duplicates and pulp duplicates for quality control) have been sent for Ni, Cu, Co, S, Au, Pt, Pd, Ag, and Mo for the 2009 sampling program.

These results are negative to date as the sulphides, mainly pyrrhotite, pyrite and magnetite and rare trace chalcopyrite and molybdenite were generally devoid of nickel and copper. Fine to medium grained diorite and gabbro have been described along with various metasedimentary rocks (clastic, dolomitic, calcitic rusty, thinly layered sediments).

The local Algonquins of Ontario representative was briefed on our exploration plans (prospecting, sampling and picketing two lines for surface geophysics) for 2009 at the Henderson property. Due to the non-destructive nature of the program, site visits were not needed at this time.

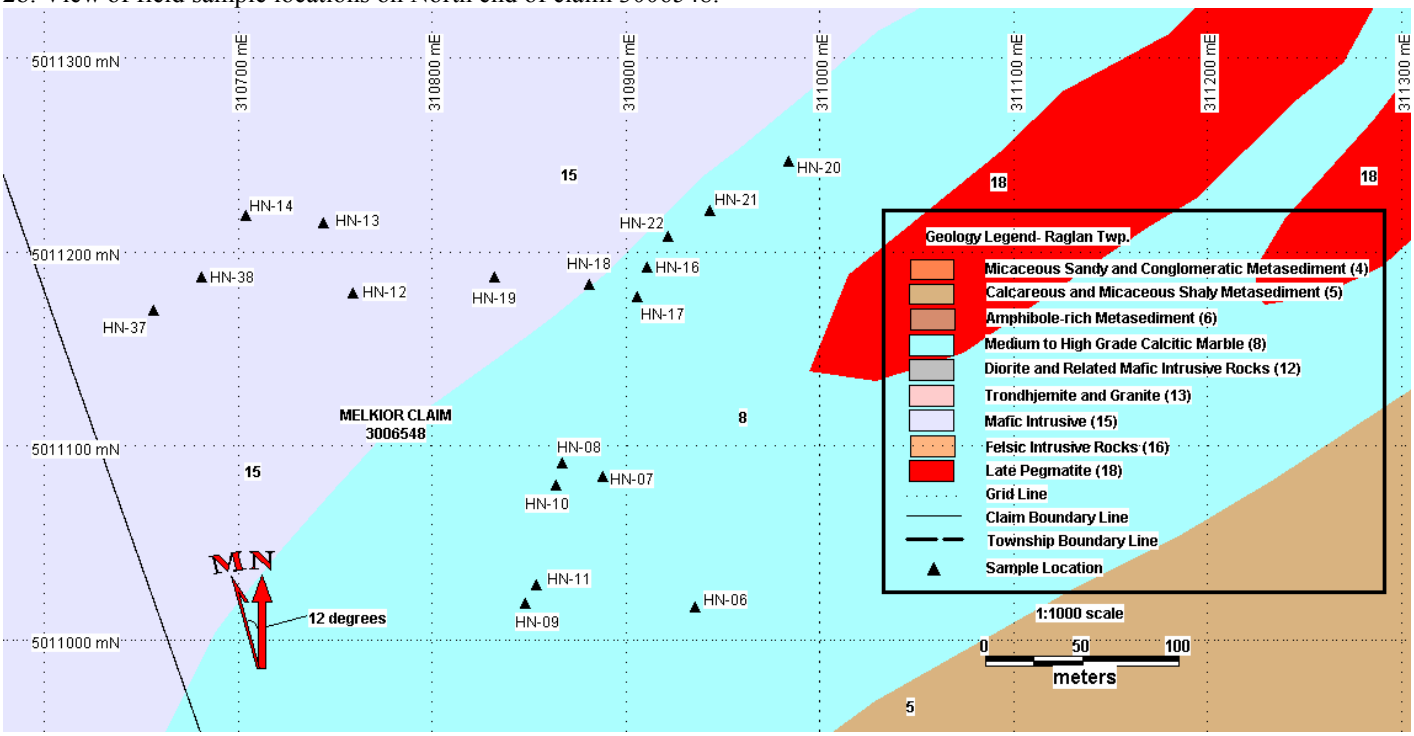
There was no health and safety, nor environmental concerns regarding the exploration program.

Figure 2a – Henderson Option Claims – Geology with grab sample points (HN-09)



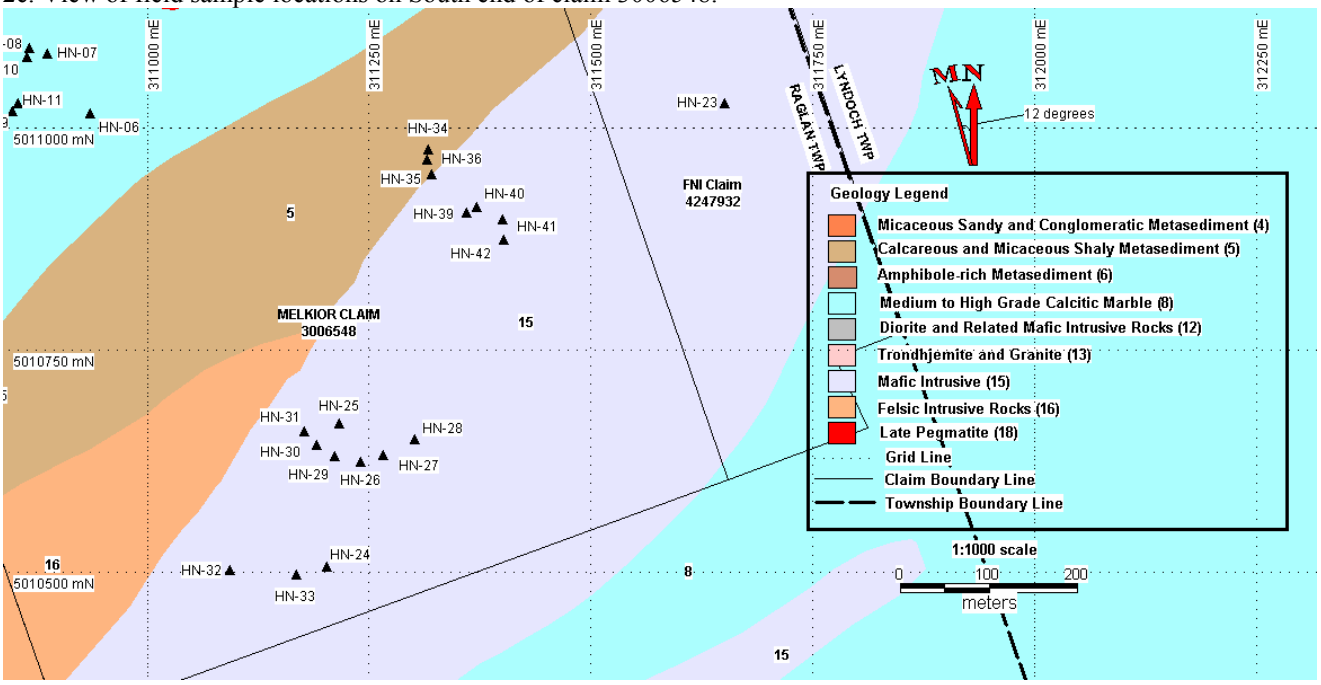
2

2b. View of field sample locations on North end of claim 3006548.



[2] Lumbers, S.B. and Vertolli, V.M. (2001). Precambrian geology, Denbigh area; Ontario Geological Survey, Preliminary Map P.3437, scale 1:50 000.

2c. View of field sample locations on South end of claim 3006548.



2d. View of field sample locations on claim 3006547.

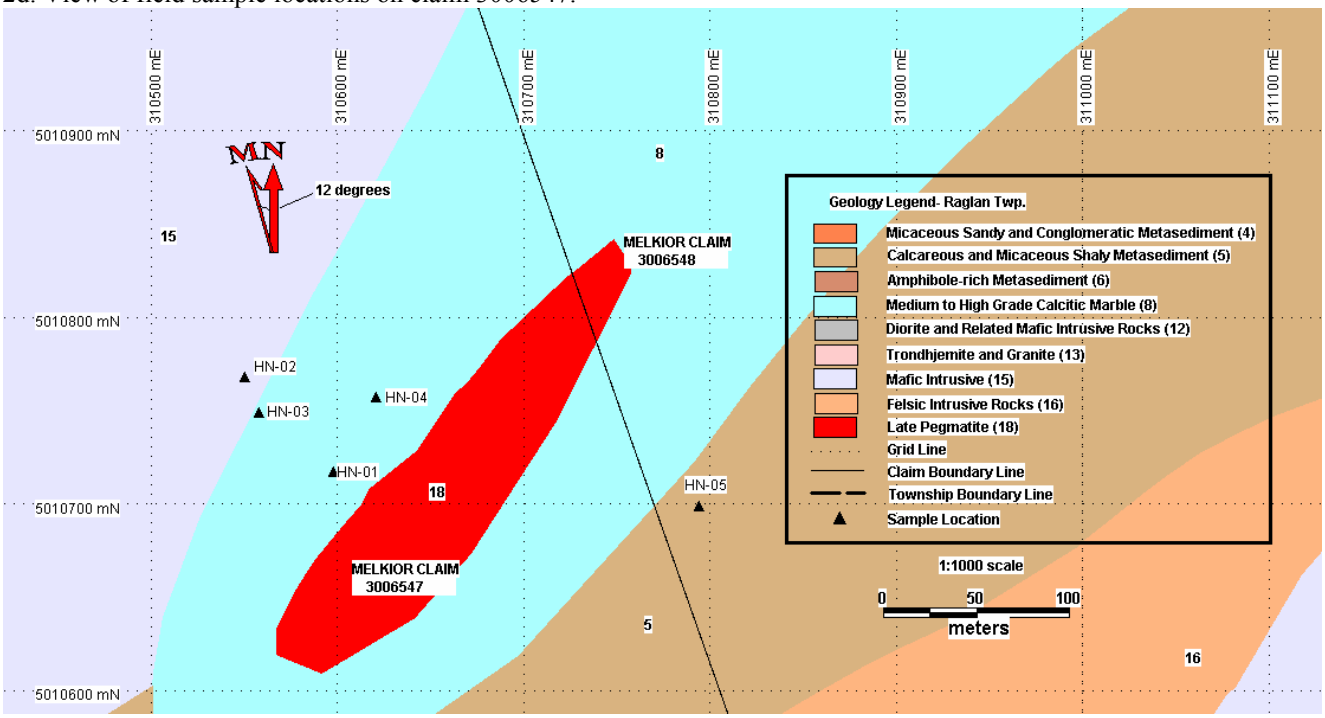


Figure 3 – 2009 Grid Lines for ground geophysics overlain on surface geology plan,
Geology from OGS Mapping Map p.3437

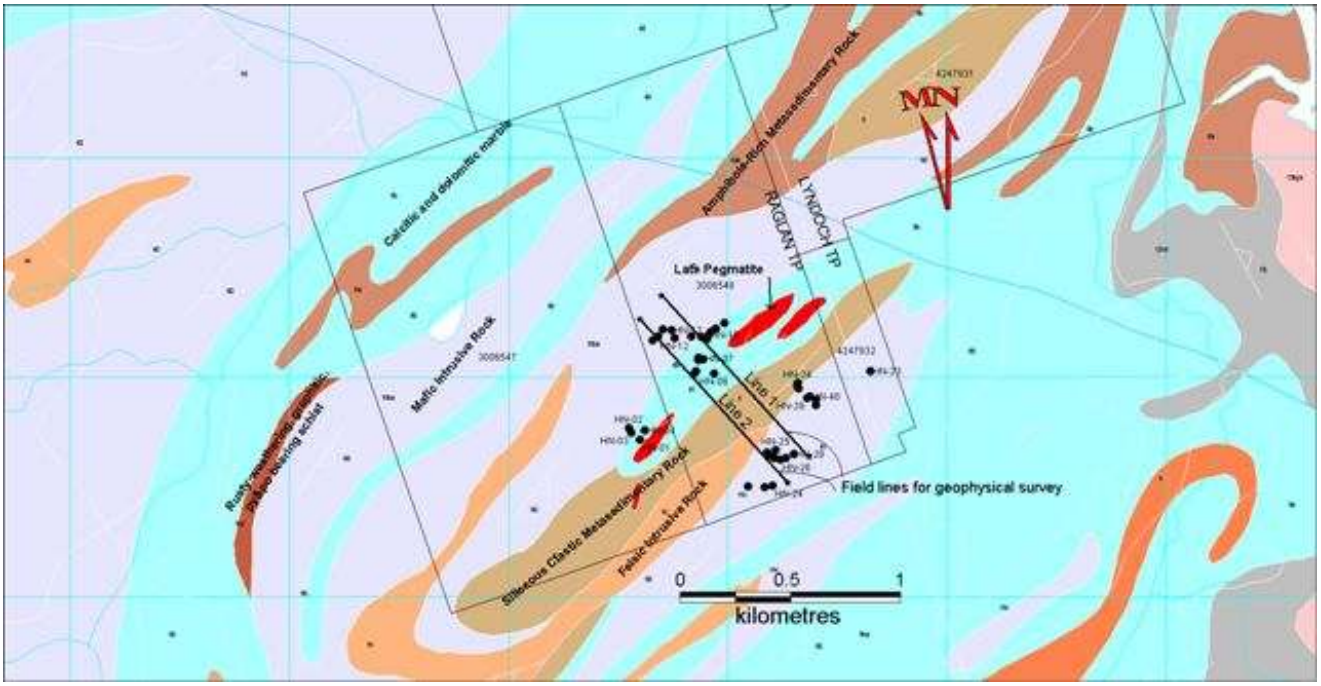


Figure 4 – 2008 FNI contracted Airborne Electro-magnetic anomalies
Geology from OGS Mapping Map p.3437

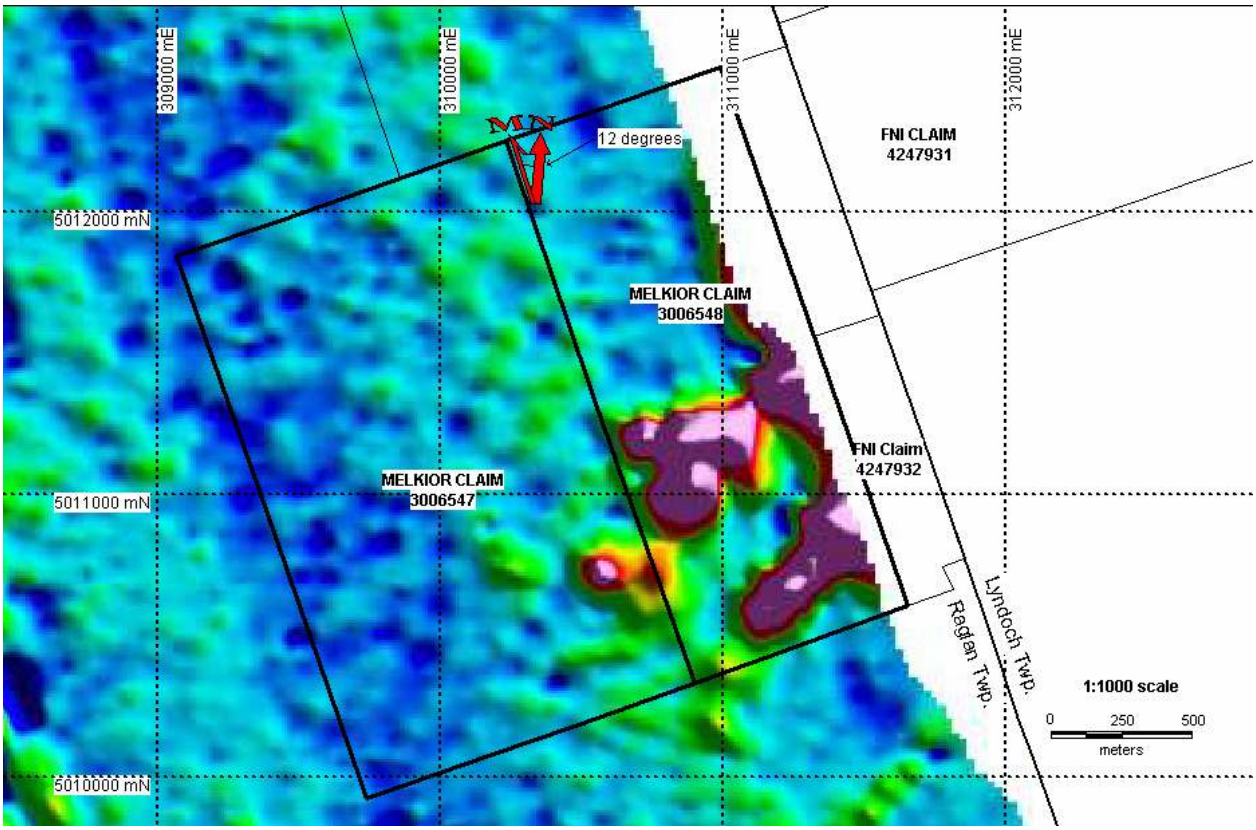


Table 2 – 2009 Location of Rock Samples– Melkior Option

Sample	Easting	Northing	Elevation (m)
	Hand Held GPS UTM NAD 83 (Zone18)		
HN-01	310598	5010717	376
HN-02	310550	5010768	372
HN-03	310558	5010749	278
HN-04	310621	5010757	279
HN-05	STD		
HN-06	310936	5011017	368
HN-07	310888	5011084	378
HN-08	310867	5011091	384
HN-09	310848	5011019	376
HN-10	310864	5011080	382
HN-11	310854	5011028	379
HN-12	310759	5011179	374
HN-13	310744	5011215	364
HN-13B	BLANK		
HN-14	310704	5011219	367
HN-16	310911	5011192	373
HN-17	310906	5011177	373
HN-18	310881	5011183	378
HN-19	310832	5011187	381
HN-20	310984	5011247	352
HN-21	310943	5011221	359
HN-22	310922	5011208	366
HN-23	311651	5011028	323
HN-24	311202	5010506	348
HN-24B	311202	5010506	348
HN-25	311216	5010668	399
HN-26	311240	5010625	388
HN-27	311266	5010632	387
HN-28	311302	5010650	387
HN-29	311211	5010631	387
HN-30	311191	5010644	391
HN-31	311177	5010659	394
HN-32	311093	5010502	364
HN-33	311168	5010498	353
HN-34	311317	5010976	354
HN-35	311321	5010948	370
HN-36	311315	5010965	364
HN-37	310656	5011170	370
HN-38	310681	5011187	368
HN-39	311360	5010905	394
HN-41	311401	5010897	388
HN-42	311402	5010874	387

The field work summary is tabulated in Table 3, and the final assay certificates are in Appendix 4.

Table 3 – 2009 Work Summary – Melkior Option

Dates	Type of Work	Hours	Samples Taken
4,5,13-Aug-09	Property Orientation and sampling	16	HN-01 to HN-05
17-Aug-09	Surface Sampling	8	HN-06 to HN-13
18-Aug-09	Surface Sampling	8	HN-14 to HN-24
19-Aug-09	Surface Sampling	8	HN-25 to HN-36
20-Aug-09	Surface Sampling	8	HN-37 to HN-42
21-Aug-09	Descriptions and sorting for lab analysis	8	
26-29-Nov-09	Finish lines on Melkior option claims	24	Monitor surface geophysics
18-Jan-10 to 16-Nov-10	Data Discussion (Crone, SGS, Surveyors), Writing Report	112	

Preliminary results from the surface geophysical surveys indicate cross – over responses (anomalies) that may require follow-up. Modeling work and reports by Crone are contained in the 2010 Exploration Report – Henderson Option.

Discussion and Conclusions

Field grab samples to date have been taken over the majority of rock types previously mapped on the claims and have not returned significant nickel or copper and have not explained the cause of the airborne nor ground geophysical surveys.

Diamond drilling was proposed to test both the ground and airborne geophysical anomalies and is detailed in the 2010 Exploration Report for the Henderson Property.

Acknowledgements

The authors would like to thank corporate FNI: Paul Davis and Marlene Henry, and the Exploration members Shirley Peloquin and Emily Laakso for office and computing assistance, and the various contractors (geology consultant and assistant – Chris Fouts; surveying –Miller; geophysics – Crone) for their excellent work.

QA/QC Commentary - First Nickel Procedures

Quality Assurance and Quality Control (QA/QC) protocols were used for the Henderson property similar to other Raglan Hills project properties. A summary of our QA/QC procedures include the following:

Rock types with descriptions, structure, sulphide estimates are logged directly into our digital computer database at the secure FNI Exploration core shed facility. Photographs are stored on our network. All representative field samples, and their pulps and rejects have been kept in locked storage. Samples to be sent for assay are bagged and a representative sample is kept in our core shed facility. Each lot has a blank and certified nickel standard at a frequency of at least one blank or standard per 25 samples. Assays are sent to the SGS Labs preparation facility in Lakefield, where they are dried, crushed to 75% passing 2mm, split to 250g and pulverized to 85% passing 75 microns, and specific gravity is measured by pycnometer. One extra selected pulp per lot is retained for future testing at a second independent laboratory. The lab sends the pulps to Toronto for analysis of nickel, copper, cobalt (sodium peroxide fusion with ICP-OES finish), gold, platinum, palladium (fire assay lead collection with ICP-OES finish), sulphur (Leco), and silver (aqua regia digestion, AAS). Results are received digitally including final certificates, and are compared to expected visual estimates. Standards and blanks are checked for their expected results.

Surface location hand held GPS surveying was completed for all samples.

APPENDIX 1: Descriptions of samples (with location map)

Appendix 1: Sample Descriptions, Location Map and Listing of Abbreviations used

Sample	Description
HN-01	Metasediment. Fg, medium grey, mod fol.
HN-02	Quartzite? Off-white, qtz rich, doesn't fizz with acid.
HN-03	Granite. Siliceous, 85% felsics, minor mafics (mica), gossan surface.
HN-04	Sediment. Dark grey, fg, micaceous, friable, not magnetic. Rock striking NE.
HN-05	STD. 904-16.
HN-06	Vcg, abundant qtz, trace py? Possible po, distinct qtz veins running through parallel to foliation, strong mag.
HN-07	Rusty sediment. Vfg, very light grey, abundant white mica (altered biotite), highly altered, friable.
HN-08	Cg, abundant qtz, rusty right through, dipping SE.
HN-09	Vcg, qtz and white feldspar with minor biotite, heterogeneous texture, varied grain size (mg to cg).
HN-10	Metasediment. Fg, rusty right through. Just west of small boulders of skarn with large actinolite/tremolite grains.
HN-11	Very friable sediment (sandy). Vfg, dark grey, mixture of mica and white feldspar.
HN-12	Metasediment? Fg, light grey fresh surface, gossan weathered surface, trace moly.
HN-13	Rusty metasediment. Fg, dark brownish grey, slightly magnetic, trace pyrrhotite and cpy?
HN-13 B	BLANK. Granite.
HN-14	Metasediment. Fg, light grey, not as friable as HN-11 to HN-13, trace magnetic silver metallic mineral (py?).
HN-15	Metasediment. Mg to cg, silicified, gossan weathered surface, amphibole/feldspar/minor qtz, skarn reaction?
HN-16	Metasediment? Variable grain size (mg to cg), very qtz rich, gossan weathered surface.
HN-17	Calcareous metasediment. Very light grey, fg to mg, slight fizz with acid, minor rust spotting.
HN-18	Variable grain size (mostly cg), light whitish grey, quartzofeldspathic, less than 5% biotite.
HN-19	Fg to mg, light pinkish white, mostly feldspar and qtz, 90% felsics, no mica.
HN-20	Metasediment. Light grey, fg, feldspar/qtz abundant, gossan surface.
HN-21	Cooked up metasediments (recrystallized). Cg (variable grain size 2-12cm), pinkish white, feldspar/qtz.
HN-22	Metasediment. Abundant feldspar, strong fol, very rusty, possible calcite, trace sulfide.
HN-23	Pinkish white, variable grain size (mostly cg), k-spar and qtz rich with minor amphibole, no mica.
HN-24a	a. Fg to mg, very dark grey, mixture of pyroxene and amphibole, igneous texture, slight foliation.
HN-24b	B. Light grey, yellow to orange staining, abundant mg to cg feldspar (sandwiched between mafic units).
HN-25	Fg to mg, no gossan, brown to black depending on biotite content, mod fol, qtz/feldspar abundant. Not magnetic.
HN-26	a. Mg, light grey, feldspar/qtz abundant. B. Greenish grey, chunks of metallic luster (not magnetic).
HN-27	Vcg, white to light grey, no fol, almost entirely feldspar.
HN-28	Similar to HN-25. Feldspar/qtz/biotite, light grey to yellowish grey, fg to mg, rust spots, mod fol. Dip N to NE.
HN-29	Mg, very rusty right through, qtz/feldspar/biotite, mod fol, not magnetic, dipping slightly south.
HN-30	Fg, medium grey, abundant biotite and qtz with feldspar, mod fol, trace magnetic sulfides, no gossan.
HN-31	Diorite? Fg to mg, dark grey, qtz/feldspar/mica and pyroxene, rusty spots, no gossan, weak fol, not magnetic.
HN-32	Variable grain size (mostly cg), feldspar/qtz/ up to 10% mica, rusty spots, variable texture.
HN-33	Mg to cg, interlocking white marble.
HN-34	Metasediment. Fg to mg, very dark grey, Qtz/feldspar abundant, biotite (possible pyroxene), well fol, SE dip.
HN-35	Strongly fol diorite and metasediment? Diorite is fg, dark grey, biotite rich, rusty spots, fol, dipping SE.
HN-36	Fg qtz/feldspar/biotite and possible pyroxene, well fol, dipping SE, layers of cg qtz and feldspar.
HN-37	Fg, greyish white, trace fg graphite, qtz/feldspar abundant, strong fol, and gossan weathered surface.

HN-38	Very light grey fresh surface, very rusty (gossan) weathered surface, mg, weak fol, qtz/feldspar. 5% graphite.
HN-39	Fg to mg, dark grey, amphibole/mica rich, minor gossan, weak fol.
HN-40	Variable grain size (mostly cg), variable textured qtz/feldspar/biotite, rusty spots, light grey to grey, weakly fol.
HN-41	Vfg, very dark grey, strong fol, qtz/feldspar, mica and amphibole abundant, gossan weathered surface.
HN-42	Metasediment. Alternating cg and fg layers, fg unit is well fol, dark grey, qtz/feldspar, and mica rich.

Short Form	**Meaning**
Vfg	Very fine grained
Fg	Fine grained
Mg	Medium grained
Cg	Coarse grained
Vcg	Very coarse grained
Fol	Foliation
Mod	Moderate
Qtz	Quartz
Py	Pyrite
Po	Pyrrhotite
Pn	Pentlandite
Cpy	Chalcopyrite
Moly	Molybdenite
Mag	Magnetic
k-spar	Potassic Feldspar
SE, NE, etc	Directions – southeast, northeast etc
w	With

APPENDIX 2: Prospecting- Pictures, Sampling

Appendix 2: Prospecting- Pictures, Sampling

Raglan Twp. Claim # 3006548 (Melkior option)
Sample: HN-23, coarse grained k-spar and qtz with minor amphibole.

Raglan Twp. Claim # 3006548 (Melkior option)
Sample: HN-35A, metasediment.

Raglan Twp. Claim # 3006548 (Melkior option)
400m North from Claim Post #3.

Raglan Twp. Claim #3006548 (Melkior option)
Sample: HN-13, rusty metasediment with trace po/cpy.

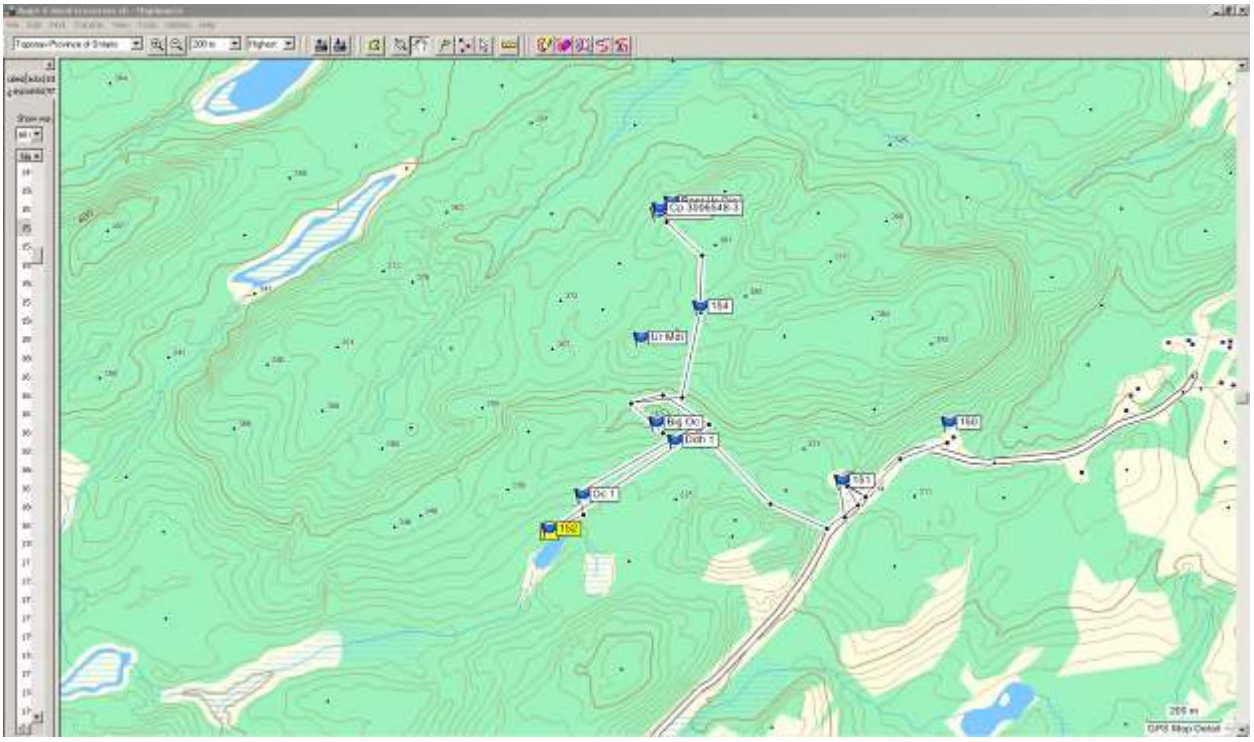
Geophysics: Line 1 (8+25), Melkior option.

Geophysics: Line 2 (8+25), Melkior option.

Geophysics: Line 2, Melkior option.

Raglan Twp. Claim # 3006547 (Melkior option)
Large Outcrop.

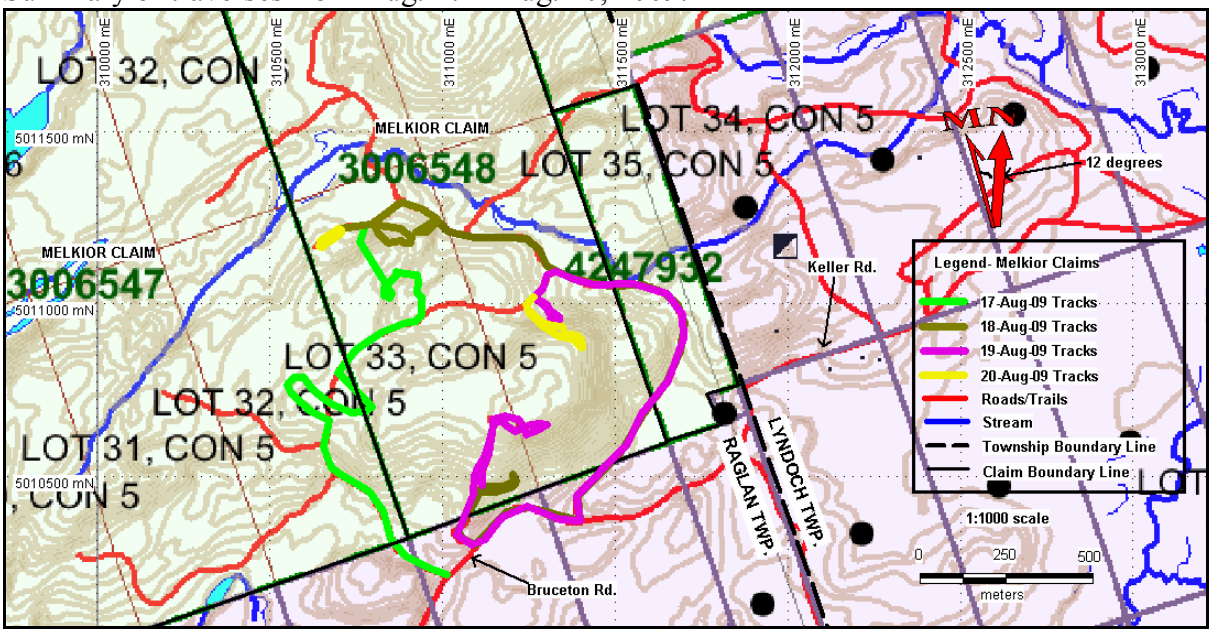
APPENDIX 3: Prospecting Traverses



Henderson Traverses – Aug. 4-5, 2009 (Garmin mapsource plots)

Henderson traverses Aug.13 in yellow w TR. And in blue – Aug. 17 w CF.

Summary of traverses from Aug. 17 – Aug. 20, 2009.



APPENDIX 4: Assay Certificates
(SGS Labs – Lakefield and Toronto, Ontario.)

SGS

Certificate of Analysis

Work Order: TO107784

To: **Scot Halladay**
First Nickel Inc.
Sudbury Exploration
2799-2 Belisle Drive
VAL CARON
ON P3N 1B3

Date: Oct 16, 2009

P.O. No.	:	HN
Project No.	:	EXPLORATION
No. Of Samples	:	26
Date Submitted	:	Aug 27, 2009
Report Comprises	:	Pages 1 to 2 (Inclusive of Cover Sheet)

Distribution of unused material:
Return to client:

Comments:

Preparation of samples was performed at the SGS Lakefield site

Certified By :
Gavin McGill
Operations Manager

SGS Minerals Services (Toronto) is accredited by Standards Council of Canada (SCC) and conforms to the requirements of ISO/IEC 17025 for specific tests as indicated on the scope of accreditation to be found at http://www.scc.ca/en/programs/lab/mineral.shtml

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method
M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion
Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Methods marked with the @ symbol (e.g. @AAS21E) denote accredited tests

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SGS

Final : TO107784 Order: HN

Element	Au	Pt	Pd	Ni	Cu	Co	S	Ag	Mo
Method	FAI323	FAI323	FAI323	@ICP90Q	@ICP90Q	@ICP90Q	@CSA06V	@AAS12E	@ICM90A
Det.Lim.	5	10	5	0.01	0.01	0.01	0.01	0.3	2
Units	ppb	ppb	ppb	%	%	%	%	g/t	ppm
HN-01	9	10	<5	<0.01	<0.01	<0.01	0.03	0.4	96
HN-02	7	<10	<5	<0.01	<0.01	<0.01	0.04	0.3	114
HN-04	50	<10	<5	<0.01	<0.01	<0.01	0.04	1.3	2
HN-05	58	40	94	1.91	1.01	0.10	19.0	3.2	5
HN-06	17	<10	<5	<0.01	0.01	<0.01	0.13	0.5	<2
HN-07	15	<10	<5	<0.01	<0.01	<0.01	0.12	0.4	5
HN-09	418	<10	<5	<0.01	<0.01	<0.01	0.03	3.6	<2
HN-10	27	<10	<5	<0.01	0.01	<0.01	0.14	0.7	<2
HN-12	16	<10	<5	<0.01	<0.01	<0.01	0.07	0.4	<2
HN-13	16	20	<5	<0.01	0.03	<0.01	4.94	0.8	13
HN-13B	<5	<10	<5	<0.01	<0.01	<0.01	0.05	0.3	4
HN-14	12	<10	<5	<0.01	<0.01	<0.01	0.37	0.4	<2
HN-16	11	<10	<5	<0.01	<0.01	<0.01	0.28	0.5	3
HN-20	30	<10	<5	<0.01	<0.01	<0.01	1.00	1.1	4
HN-22	10	<10	<5	<0.01	<0.01	<0.01	0.04	<0.3	<2
HN-24	329	<10	<5	<0.01	<0.01	<0.01	0.04	2.3	<2
HN-24B	<5	<10	<5	<0.01	<0.01	<0.01	0.03	<0.3	<2
HN-25	5	<10	<5	<0.01	<0.01	<0.01	0.03	<0.3	2
HN-28	43	<10	<5	<0.01	<0.01	<0.01	0.03	0.6	<2
HN-30	180	<10	<5	<0.01	<0.01	<0.01	0.22	<0.3	4
HN-31	27	<10	<5	<0.01	<0.01	<0.01	0.08	0.4	5
HN-34	31	<10	<5	<0.01	<0.01	<0.01	0.05	0.4	3
HN-37	20	<10	<5	<0.01	0.01	<0.01	2.29	0.4	5
HN-38	9	<10	<5	<0.01	0.01	<0.01	2.38	<0.3	10
HN-39	19	<10	<5	<0.01	<0.01	<0.01	0.05	<0.3	<2
HN-41	9	<10	<5	<0.01	<0.01	<0.01	0.03	<0.3	<2
*Rep HN-01								0.4	
*Rep HN-39								<0.3	
*Rep HN-13							4.87		
*Rep HN-31							0.08		
*Rep HN-07	5	<10	<5						
*Rep HN-31	17	<10	<5						
*Rep HN-01				<0.01	<0.01	<0.01			
*Rep HN-22				<0.01	<0.01	<0.01			
*Rep HN-28									<2

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APPENDIX 5: Miller Surveying – 2 Lines in Raglan Twp.

Raw location data for the pickets

FIRST NICKLE INC.
JOB # 09-7014
26-Nov-09
DATUM: UTM (NORTH) NAD83(CSRS) ZONE 18

LINE # 1

Point	Northing	Easting	Elevation	Surveyor
3	5010629	311385	START OF LINE 1 SOUTH	
34	5010667.452	311353.238	370.435	WS
33	5010684.297	311335.157	382.587	WS
32	5010703.821	311317.669	385.9	WS
31	5010720.521	311300.519	390.317	WS
30	5010739.55	311284.251	391.037	WS
29	5010758.227	311266.165	393.516	WS
28	5010776.726	311249.85	383.794	WS
27	5010794.966	311233.115	384.802	WS
26	5010812.797	311217.916	384.364	WS
25	5010831.823	311198.873	377.251	WS
24	5010850.068	311182.29	372.211	WS
23	5010868.405	311165.835	367.229	WS
22	5010885.897	311148.7	365.574	WS
21	5010905.744	311132.427	357.975	WS
20	5010924.261	311114.902	359.065	WS
19	5010942.232	311098.551	360.407	WS
18	5010960.927	311081.105	359.967	WS
17	5010980.272	311065.179	360.561	WS
15	5010998.414	311047.228	361.189	WS
78	5011017.508	311030.641	363.022	WS
77	5011034.785	311013.164	367.4	WS
76	5011053.44	310996.509	365.876	WS
86	5011016.179	311031.855	359.3	WS
74	5011091.165	310963.556	356.306	WS
73	5011109.316	310946.186	352.957	WS
87	5011126.794	310929.183	364.9	WS
71	5011145.77	310913.226	366.208	WS
70	5011163.89	310895.759	372.438	WS
69	5011182.275	310879.985	370.172	WS
68	5011199.66	310862.853	364.52	WS
67	5011219.915	310845.759	353.093	WS
66	5011237.734	310828.733	353.755	WS
88	5011255.821	310811	350.1	WS
2	5011366	310711	END OF LINE 1 NORTH	

LINE # 2

Point	Northing	Easting	Elevation	Surveyor
5	5010522	311270	START OF LINE 2 SOUTH	
79	5010522.336	311270.294	329.911	WS
84	5010540.856	311253.623	351.2	WS
85	5010558.216	311237.375	350.5	WS
82	5010576.661	311219.493	360.516	WS
83	5010596.2	311202.381	367.287	WS
36	5010616.209	311185.944	376.569	WS
37	5010632.771	311169.203	383.368	WS
38	5010651.734	311153.49	385.911	WS
39	5010671.535	311136.314	389.877	WS
40	5010689.165	311118.458	382.008	WS
41	5010707.926	311102.846	384.598	WS
42	5010726.338	311085.991	382.118	WS
43	5010743.692	311069.261	390.323	WS
44	5010763.596	311052.93	384.698	WS
45	5010782.759	311035.876	381.738	WS
46	5010800.382	311019.696	378.109	WS
47	5010819.208	311001.734	372.278	WS
48	5010837.956	310986.401	371.338	WS
49	5010855.884	310968.912	373.323	WS
50	5010875.008	310952.26	373.902	WS
51	5010893.511	310935.359	376.72	WS
52	5010912.423	310918.561	370.714	WS
53	5010930.816	310902.851	365.351	WS
54	5010949.977	310885.578	363.836	WS
55	5010967.655	310869.156	361.033	WS
56	5010986.457	310850.781	361.409	WS
57	5011005.426	310834.492	371.423	WS
89	5011023.116	310818.643	376.9	WS
59	5011042.466	310801.704	380.484	WS
60	5011060.784	310783.768	375.981	WS
61	5011079.304	310768.764	378.183	WS
62	5011098.197	310751.217	380.514	WS
63	5011116.297	310734.756	380.127	WS
64	5011134.879	310717.442	375.141	WS
4	5011266	310600	END OF LINE 2 NORTH	

APPENDIX 6: Geophysics –

Crone Geophysics Time Domain Electro-magnetic (TDEM)

Logistics Report

Note: Data has been edited and extracted from the full report (as it included other clients property data)

Geophysical Survey Report

covering

Pulse EM Surveys

over the

Raglan Hills

for

First Nickel

during

November 2009

by

CRONE GEOPHYSICS & EXPLORATION LTD.

Township; Henderson property – Raglan Township: Southern Ontario

Survey Type:	**Surface Pulse EM Surveys**
Survey Operators:	**Rob Chapman, Andrew Moores**
Surface Surveys:	**HN0901**
Survey Period:	**November 26th 2009 to November 29th, 2009**
Report By:	**Mark Hunter**
Report Date:	**January 2010**

TABLE OF CONTENTS

1.0 INTRODUCTION

Crone Geophysics & Exploration Limited was contracted by First Nickel to conduct Surface Pulse Electromagnetic Surveys on one property in Raglan Twp. in Southern Ontario. This report summarizes the geophysical work carried out in November 2009. Two (2) surface lines covering one (1) surface loop were surveyed during the period November 26th to November 29th 2009. The appendices to this report contain page size plan maps, PEM profiles (linear 5-axis and logarithmic scale), and step response profiles.

2.0 PROPERTY LOCATION

The First Nickel Henderson property is located approximately 45km NE of the city of Bancroft, in Southern Ontario (*Figure 1*). The Henderson property is part of Raglan Hills Project and had two lines surveyed and picketed every 25m (*Figure 3*).

3.0 PERSONNEL

The personnel involved in this project during the reporting period include:

Survey Operators:	Rob Chapman, Andrew Moores
Data Processing:	Mark Hunter
Report:	Mark Hunter

4.0 SURVEY METHODS

Crone Pulse EM is a time domain electromagnetic method in which a precise pulse of current with a controlled linear shut off is transmitted through a large loop of wire on the ground and the rate of decay of the induced secondary field is measured across a series of time windows during the off-time. The EMF created by the shutting-off of the current induces eddy currents in nearby conductive material thus setting-up a secondary magnetic field. When the primary field is terminated, this magnetic field will decay with time. The amplitude of the secondary field and the decay rate are dependent on the quality and size of the conductor.

The surface survey was carried out using a time base of 16.66ms (15 Hz), with a 1.5 ms shut-off ramp time. Vertical (Z-component) and in-line (X-component) data was collected at a nominal survey interval of 50 meters with 25 meter detailing. The positive X direction is defined as grid north, while the primary field is Z positive up inside the transmitter loop.

In addition to measuring the standard Primary Pulse channel on the ramp and 20 off-time channels, the Step Response may also be calculated. Step Response requires accurate geometrical control in which the loop position and the hole geometry are accurately determined. In the current surveys positional information was collected by Crone using a sub-meter capable GPS and regional base station. Positional information is provided in the UTM projection (zone 18 North), utilizing the NAD 1983 Canada datum. Elevations are given relative to Mean Sea Level based on the EGM96 Global geoid model.

The calculated Step Response values are binned into an S1 channel (from 0.5T to T), an S2 channel (from 0.25T to 0.5T), an S3 channel (from 0.125T to 0.25T) and an S4 channel (from 0.0625T to 0.125T, where T is the time base). The S1 channel

is normalized to the theoretical primary field, while S2, S3 and S4 are normalized to S1. The S1 value is used to identify responses from highly conductive sources. In the absence of any conductors the Primary Field should exactly equal the theoretical field for a given component. In the case of generally resistive host and poorer conductors the S1 value will be very close or equal to the theoretical field for a given component

The equipment used on this project was a Crone Pulse EM Borehole system. This includes a 4.8 kW transmitter with a 220V voltage regulator which is powered by an 11 hp motor generator. The Crone Digital Receiver was used to collect the field data. The synchronization between the Transmitter and the Receiver was maintained by a crystal-clock.

Data units are nT/s.

Crone Geophysics & Exploration Ltd.

5.0 SURVEY PARAMETERS

Table I: Transmitter Loop Coverage

Loop	Property	Size (meters)	Corner Coordinates UTM NAD83 Canada Zone 18N
HN0901	Henderson	1100x1100	310128E 5011076N; 310978E 5010173N; 311763E 5010909N; 311066E 5011744N

Table II: Surface Survey Coverage

Line	TX loop	Timebase (ms)	Ramp (ms)	Current (Amps)	Station From	Station To	Length (m)	Comp
1E	HN0901	16.66	1.5	12	0N	1000N	1000	XZ
2E	HN0901	16.66	1.5	12	0N	1000N	1000	XZ

The following table shows the various time gates that constitute the channel configurations set up in the Crone PEM Receiver used in the surveys discussed in this report. The 16.66 ms timebase uses off-time channels 1 – 20.

Table III: Channel Configuration

Channel	Start		Finish		Channel	Start		Finish	
PP	-200	µs	-100	µs					
1	48	µs	64	µs	**2**	64	µs	84	µs
3	84	µs	112	µs	**4**	112	µs	152	µs
5	152	µs	204	µs	**6**	204	µs	268	µs
7	268	µs	360	µs	**8**	360	µs	480	µs
9	480	µs	640	µs	**10**	640	µs	848	µs
11	848	µs	1.128	ms	**12**	1.128	ms	1.496	ms
13	1.496	ms	1.992	ms	**14**	1.992	ms	2.644	ms
15	2.644	ms	3.512	ms	**16**	3.512	ms	4.664	ms
17	4.664	ms	6.192	ms	**18**	6.192	ms	8.22	ms
19	8.22	ms	10.92	ms	**20**	10.92	ms	14.4	ms

6.0 PRODUCTION SUMMARY

Table IV: Production Summary

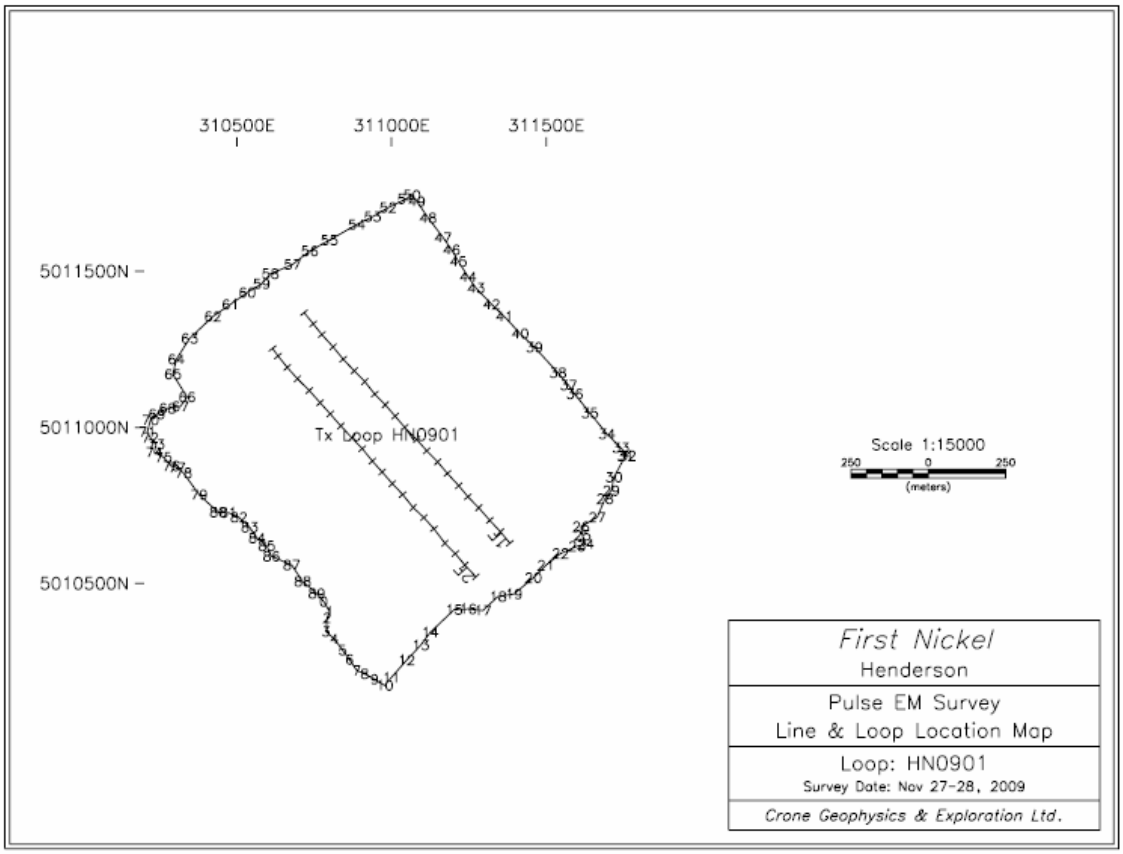
26-Nov-2009	Access Henderson property, Looping HN0901				
27-Nov-2009	SPEM:	1E	500N - 1000N	ZX	Loop: HN0901
	SPEM:	2E	550N - 800N	ZX	Loop: HN0901
28-Nov-2009	SPEM:	1E	0N - 450N	ZX	Loop: HN0901
	SPEM:	2E	0N - 500N, 850N - 1000N	ZX	Loop: HN0901
	Pickup loop LHN0901				
29-Nov-2009	DEMOB				

Respectfully submitted,

Mark Hunter
Crone Geophysics & Exploration Ltd.

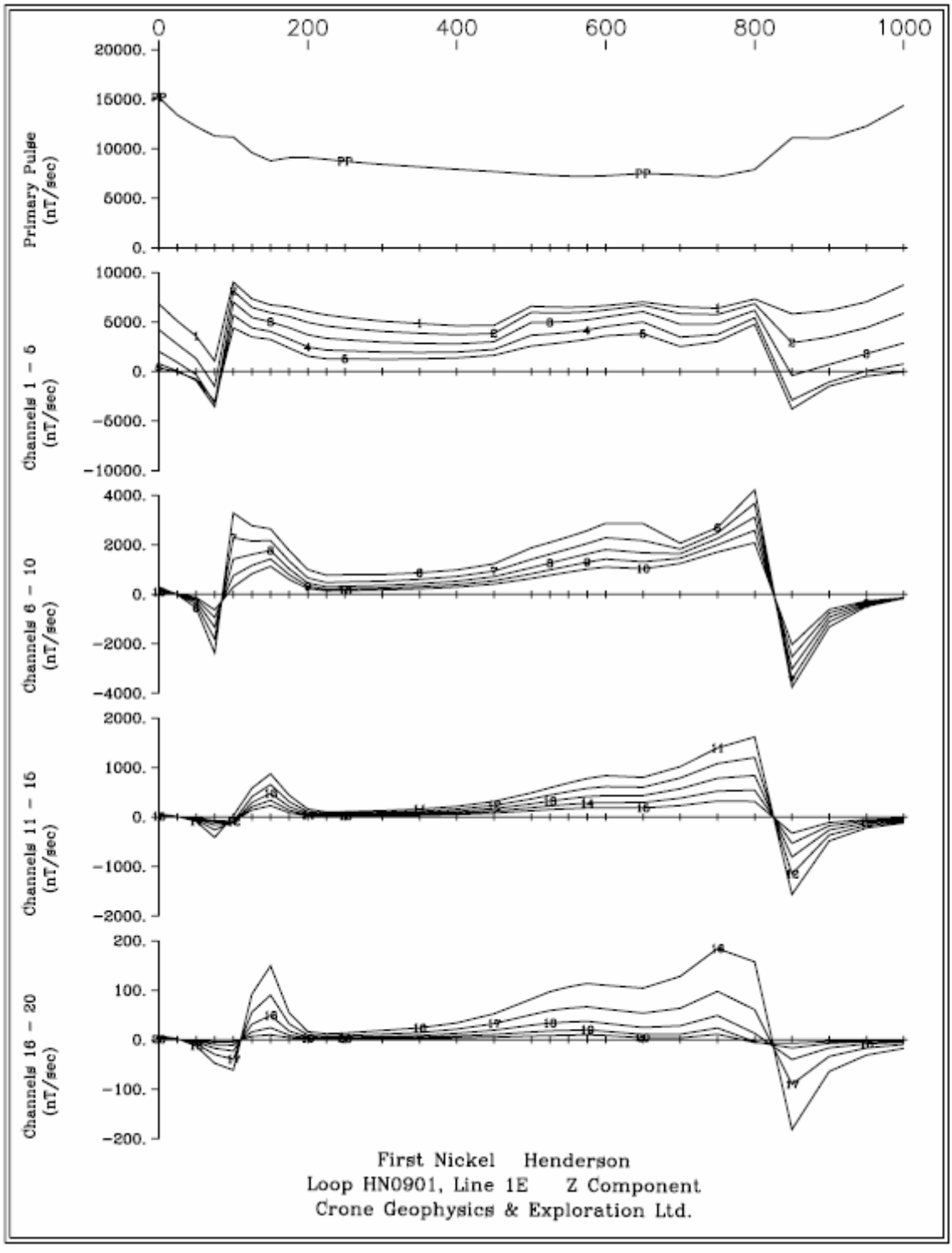
APPENDIX I

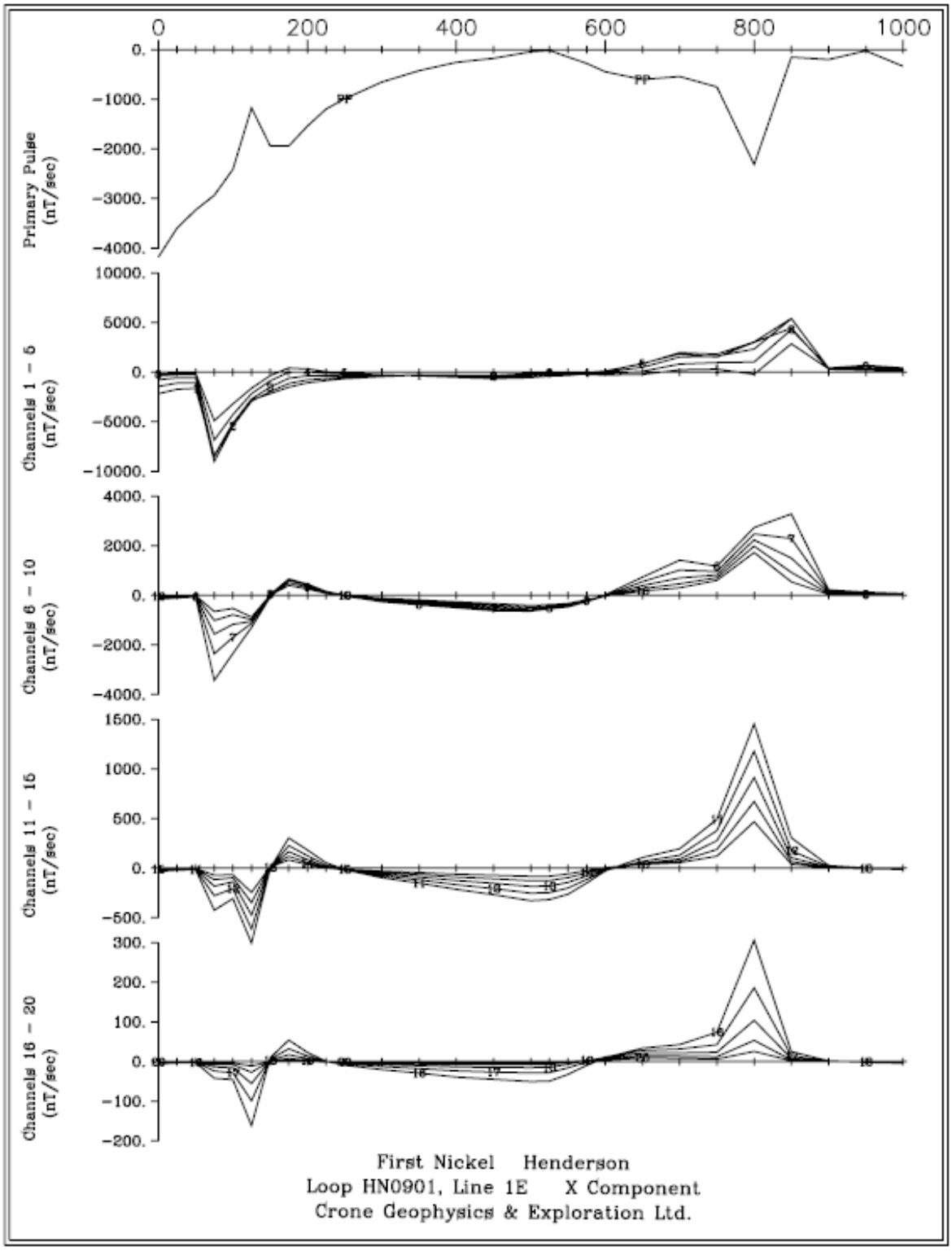
PLAN AND SECTION MAPS

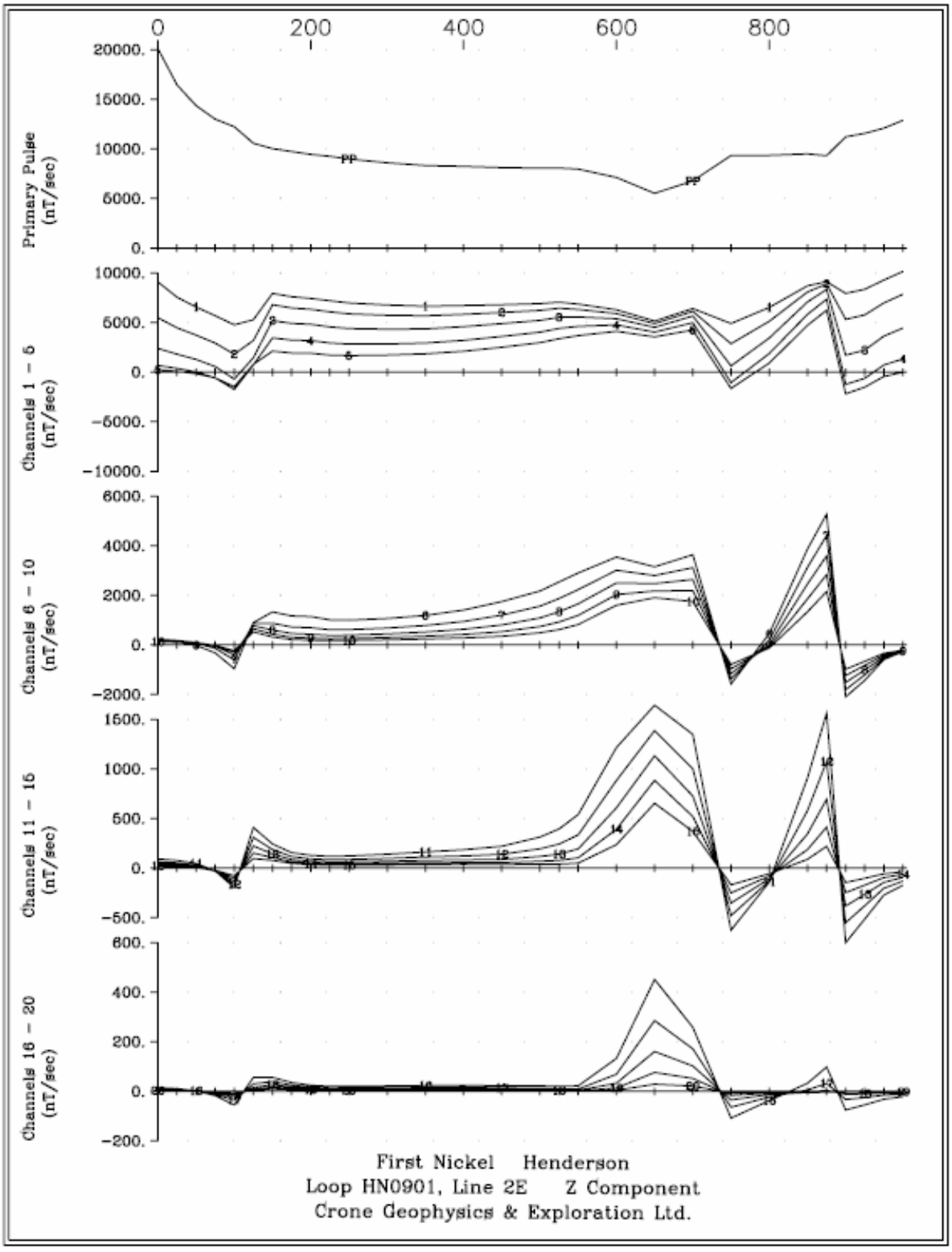


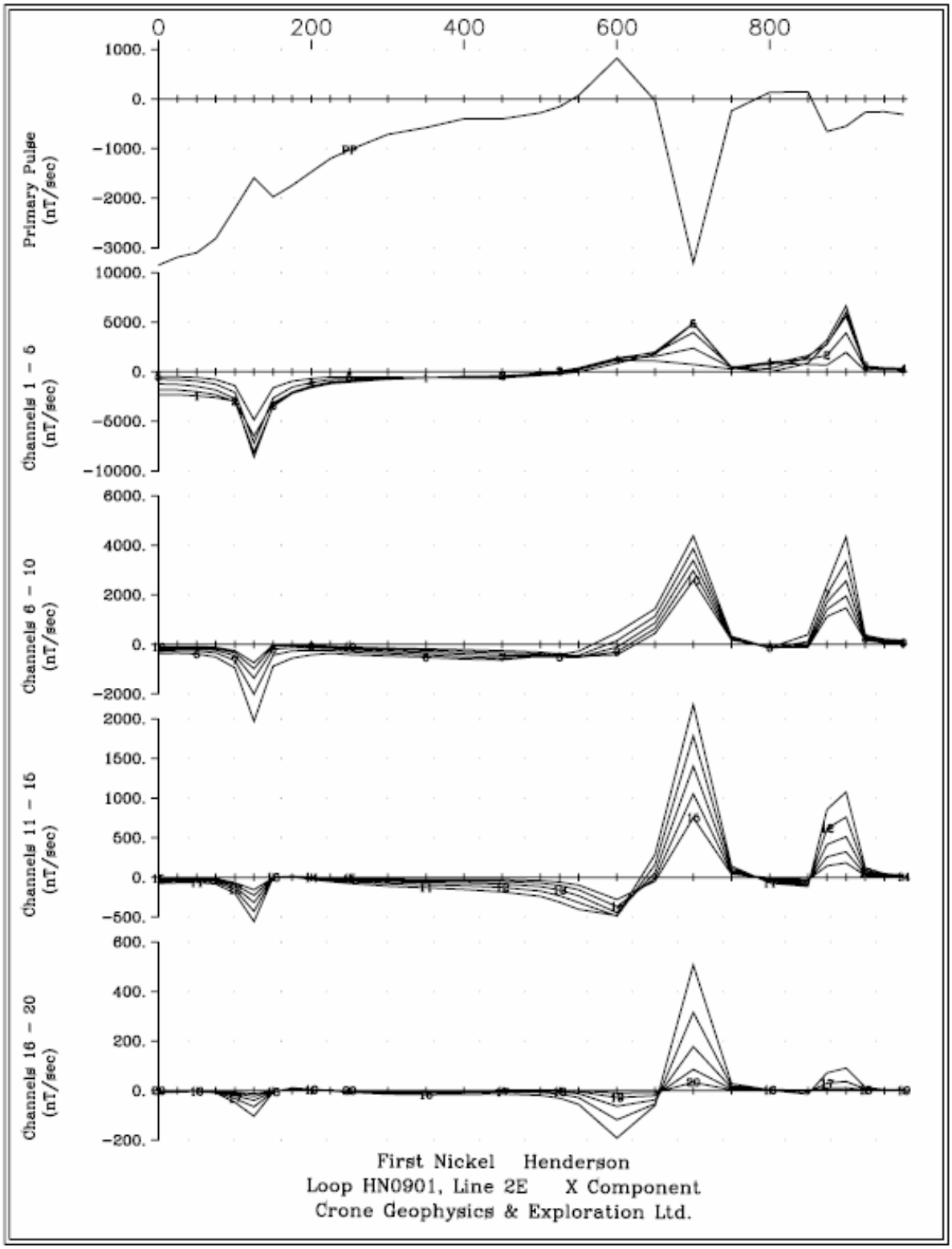
APPENDIX II

LINEAR (5-AXIS) PULSE EM DATA PROFILES

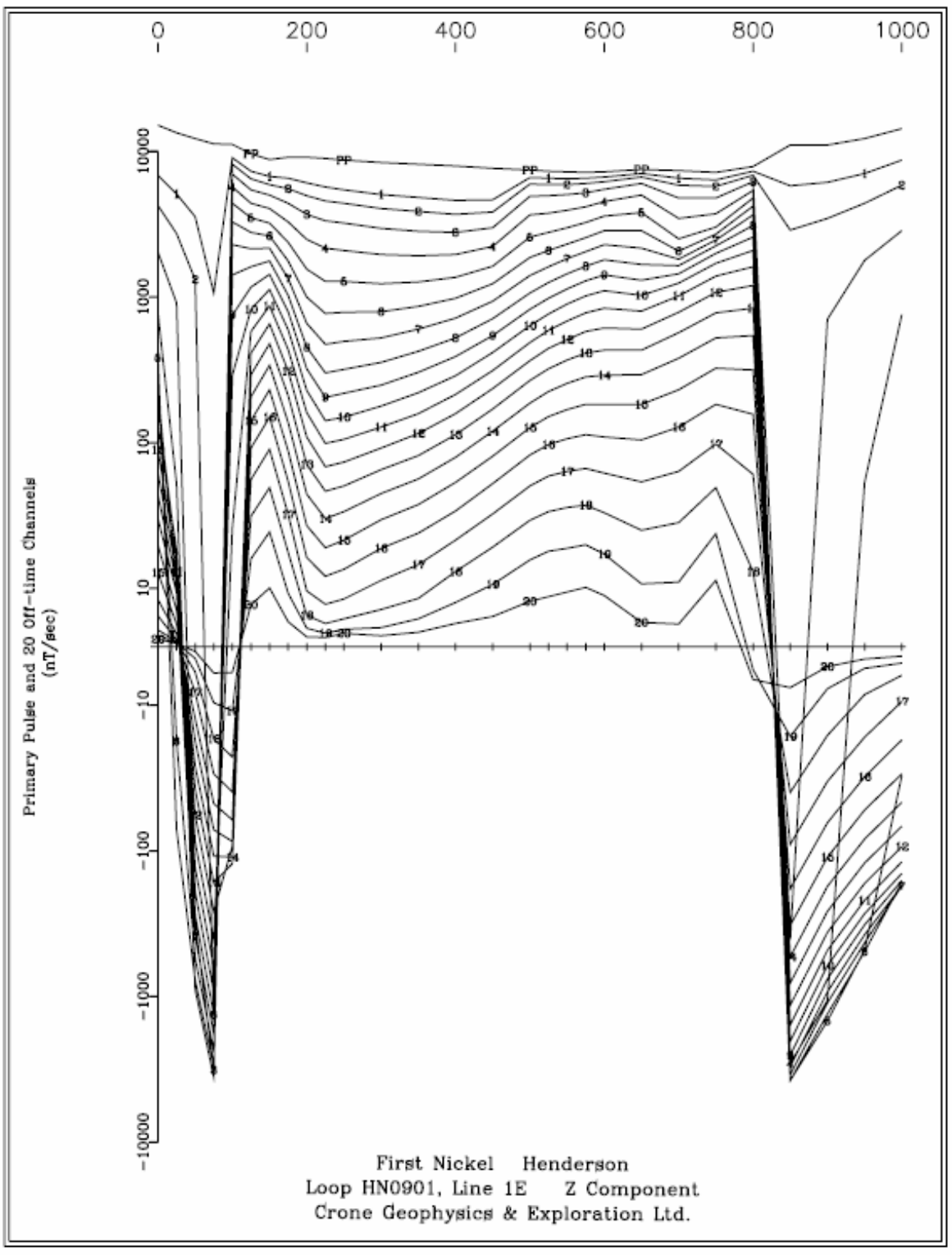

0
200
400
600
800
1000
Primary Pulse (nT/sec)
Channels 1 - 5 (nT/sec)
Channels 6 - 10 (nT/sec)
Channels 11 - 15 (nT/sec)
Channels 16 - 20 (nT/sec)
First Nickel Henderson
Loop HN0901, Line 1E Z Component
Crone Geophysics & Exploration Ltd.

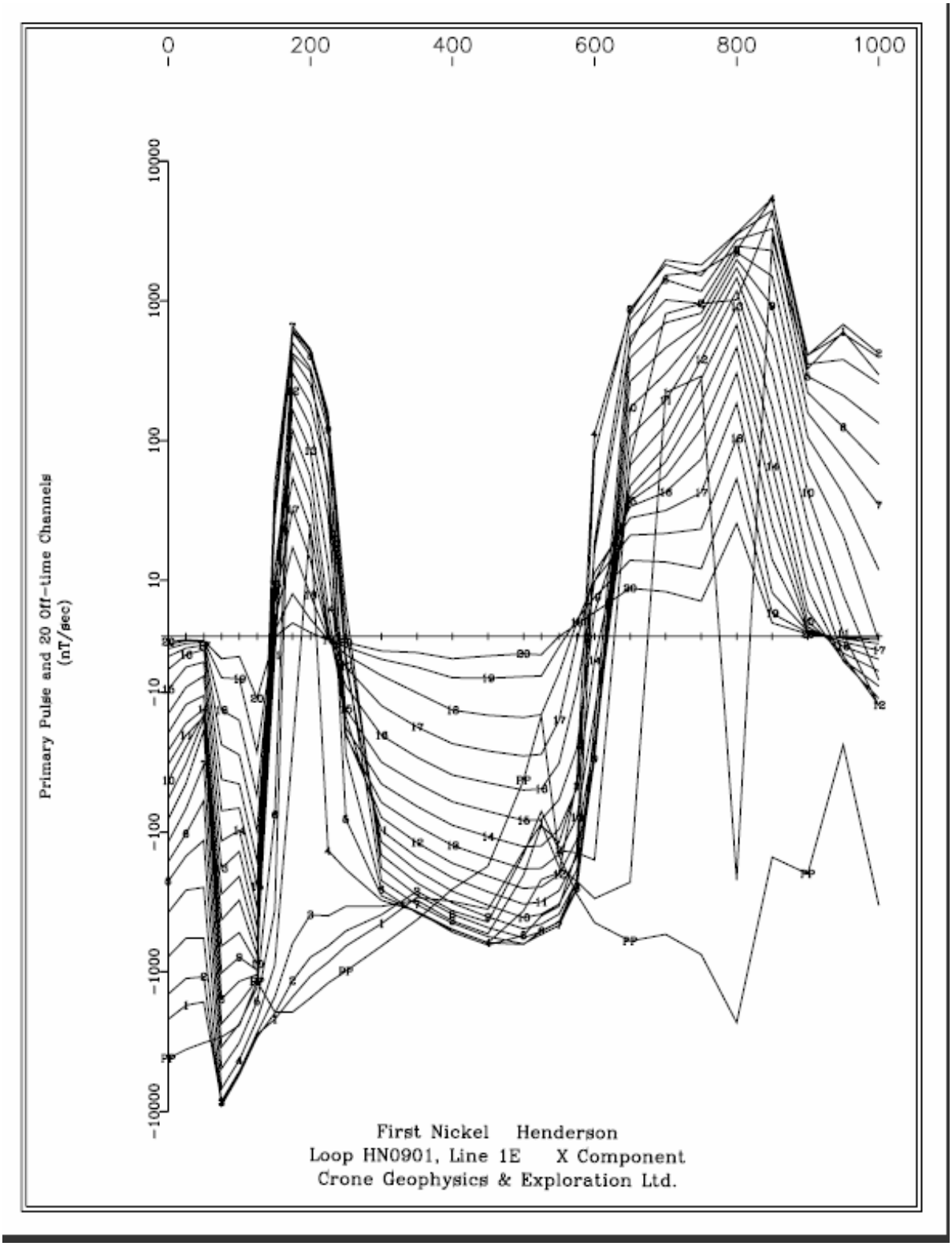

0
200
400
600
800
1000
Primary Pulse (nT/sec)
0.
-1000.
-2000.
-3000.
-4000.
PP
Channels 1 - 5 (nT/sec)
10000.
5000.
0.
-5000.
-10000.
Channels 6 - 10 (nT/sec)
4000.
2000.
0.
-2000.
-4000.
Channels 11 - 15 (nT/sec)
1500.
1000.
500.
0.
-500.
Channels 16 - 20 (nT/sec)
300.
200.
100.
0.
-100.
-200.
First Nickel Henderson
Loop HN0901, Line 1E X Component
Crone Geophysics & Exploration Ltd.

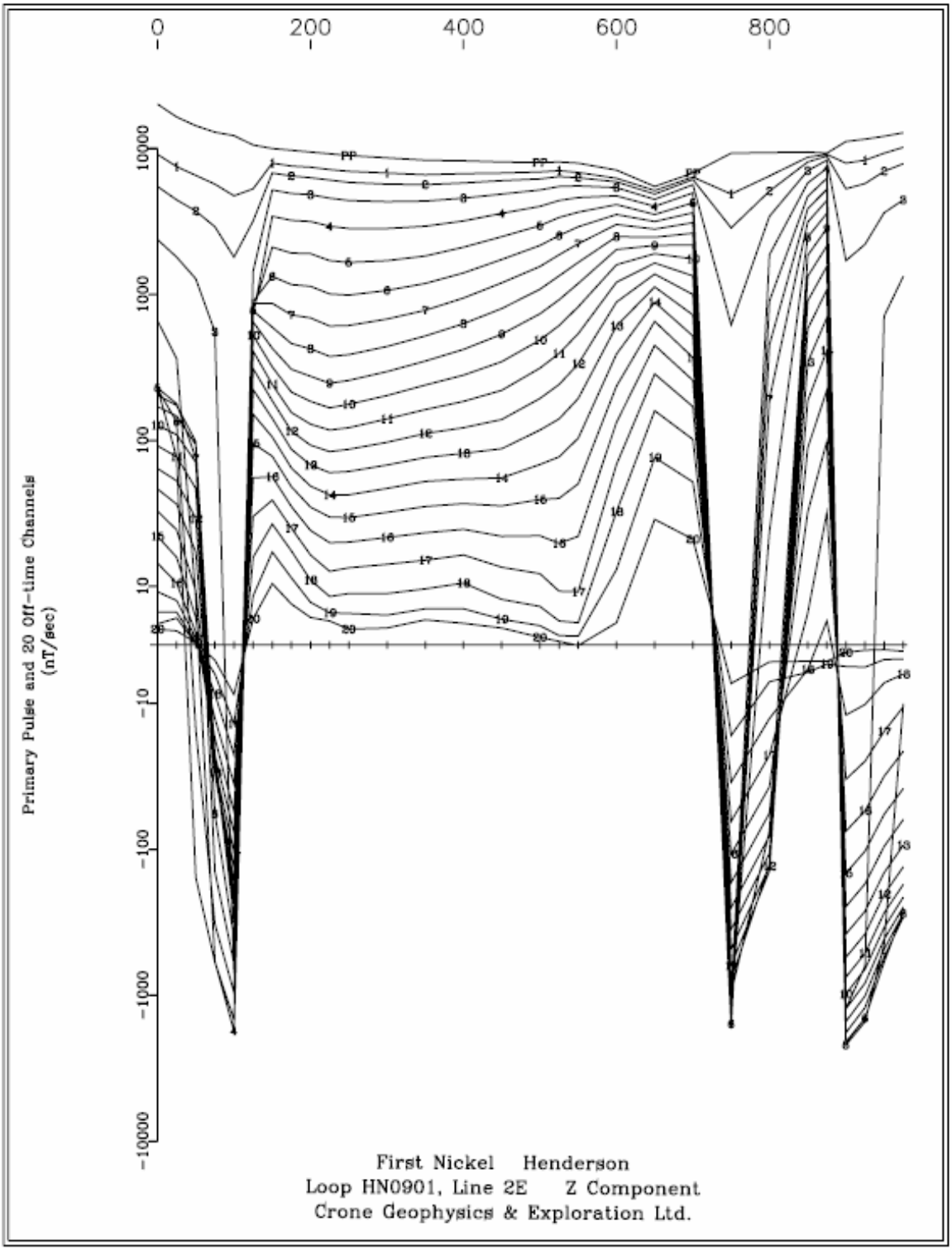

0
200
400
600
800
Primary Pulse (nT/sec)
20000.
15000.
10000.
5000.
0.
PP
PP
Channels 1 - 5 (nT/sec)
10000.
5000.
0.
-5000.
-10000.
Channels 6 - 10 (nT/sec)
6000.
4000.
2000.
0.
-2000.
Channels 11 - 15 (nT/sec)
1500.
1000.
500.
0.
-500.
Channels 16 - 20 (nT/sec)
600.
400.
200.
0.
-200.
First Nickel Henderson
Loop HN0901, Line 2E Z Component
Crone Geophysics & Exploration Ltd.

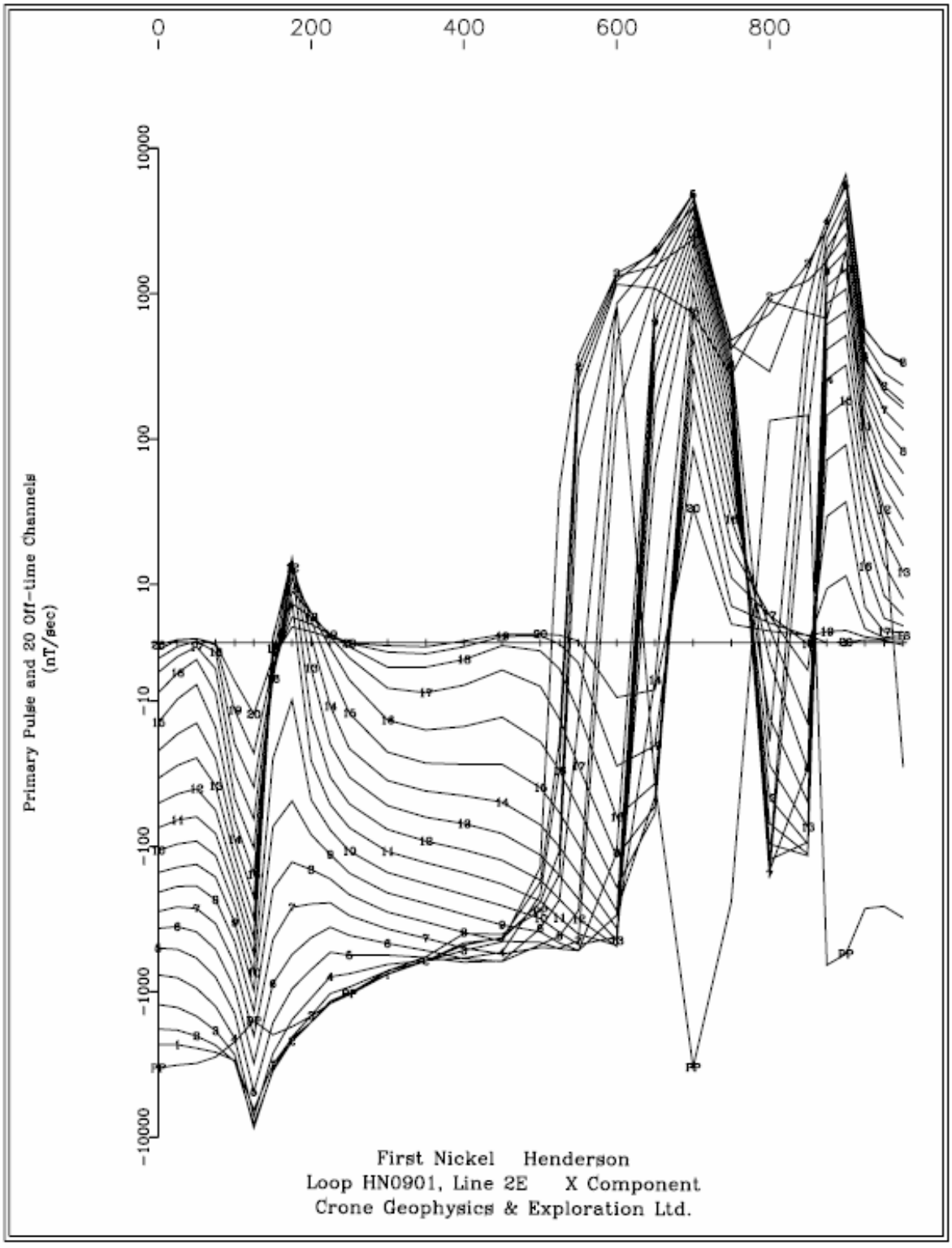

0
200
400
600
800
Primary Pulse (nT/sec)
1000.
0.
-1000.
-2000.
-3000.
PP
Channels 1 - 6 (nT/sec)
10000.
5000.
0.
-5000.
-10000.
Channels 6 - 10 (nT/sec)
6000.
4000.
2000.
0.
-2000.
Channels 11 - 16 (nT/sec)
2000.
1500.
1000.
500.
0.
-500.
Channels 16 - 20 (nT/sec)
600.
400.
200.
0.
-200.
First Nickel Henderson
Loop HN0901, Line 2E X Component
Crone Geophysics & Exploration Ltd.

APPENDIX III
PULSE EM DATA PROFILES (LIN-LOG SCALE)

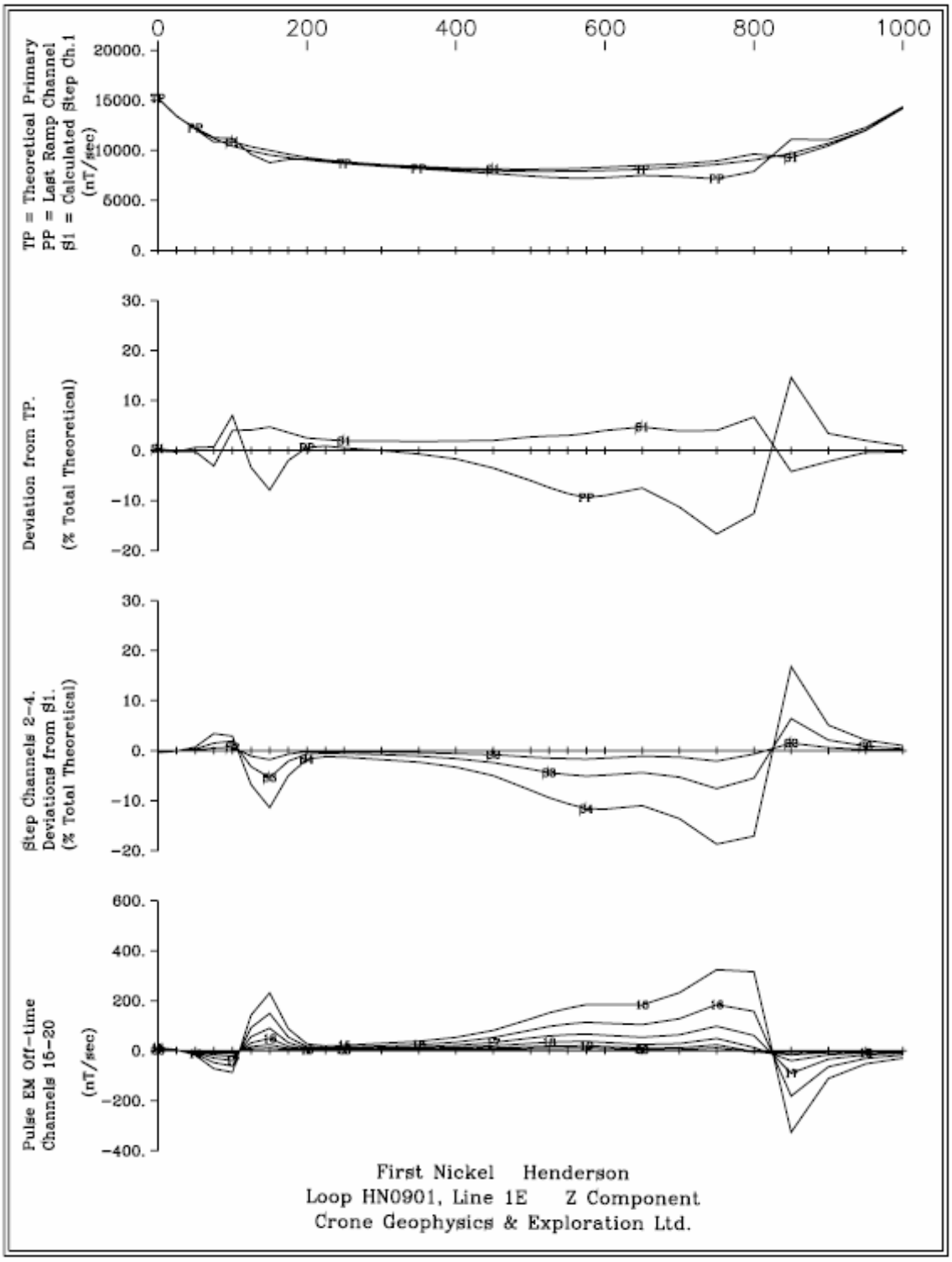


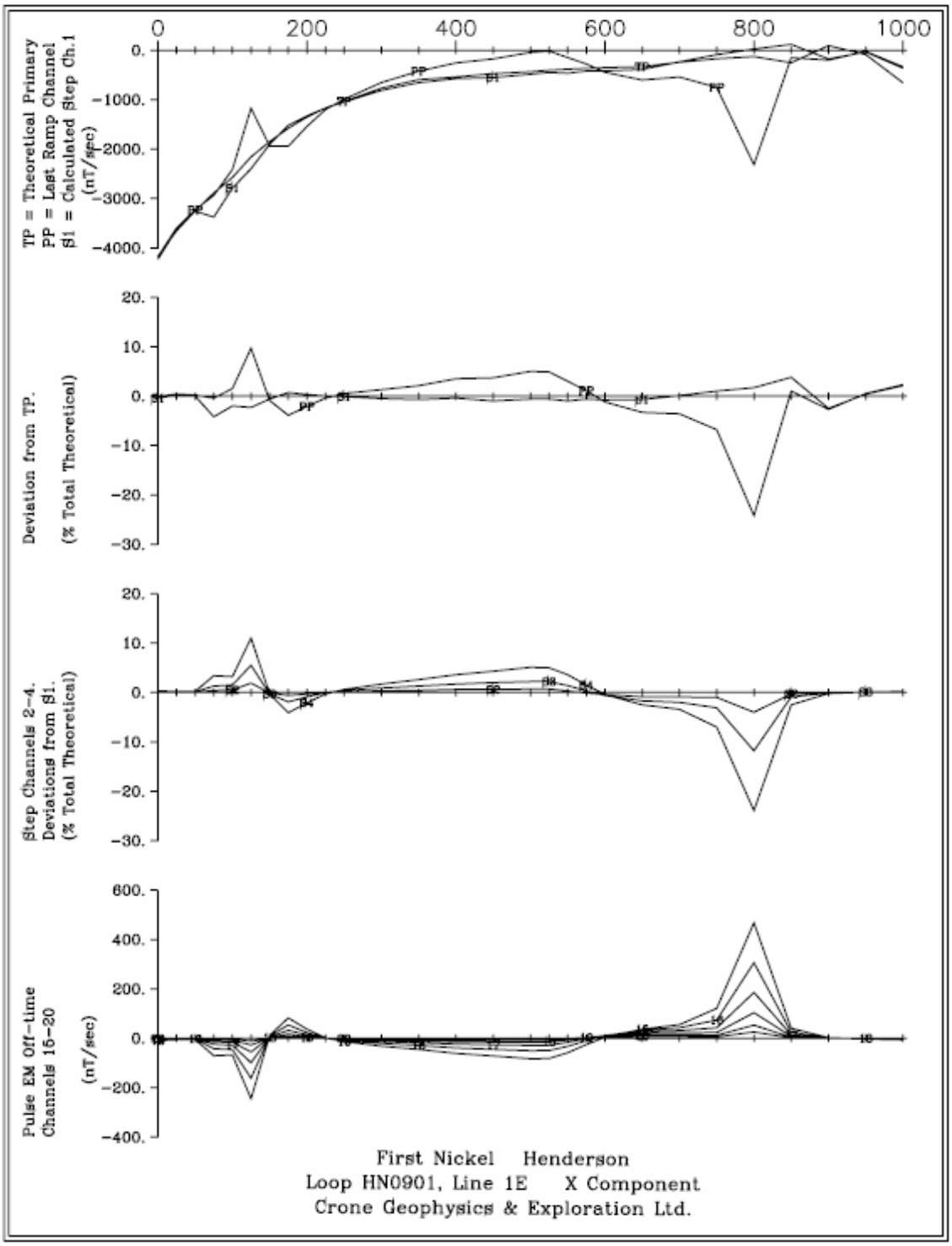

0
200
400
600
800
1000
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
First Nickel Henderson
Loop HN0901, Line 1E X Component
Crone Geophysics & Exploration Ltd.

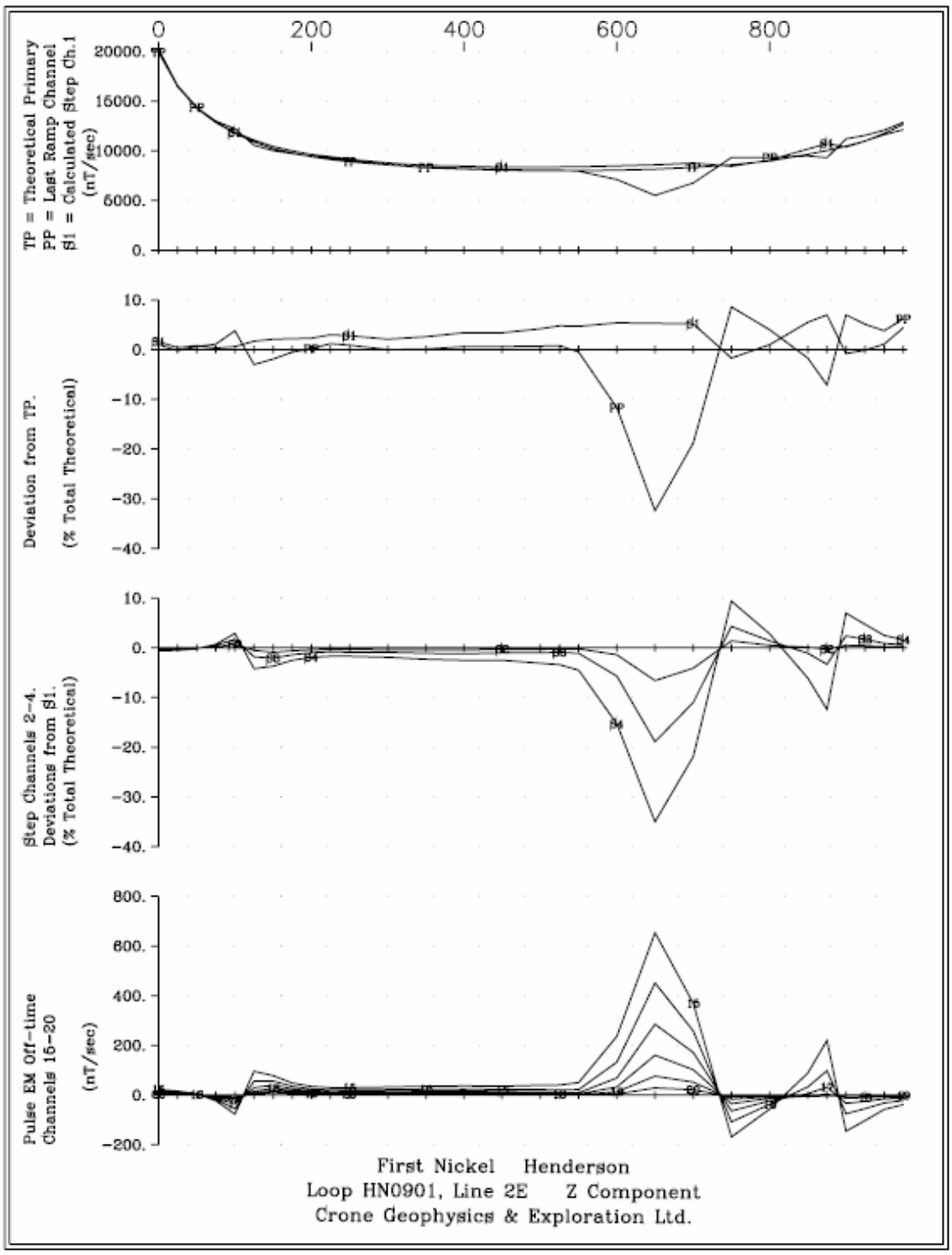

0
200
400
600
800
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
First Nickel Henderson
Loop HN0901, Line 2E Z Component
Crone Geophysics & Exploration Ltd.

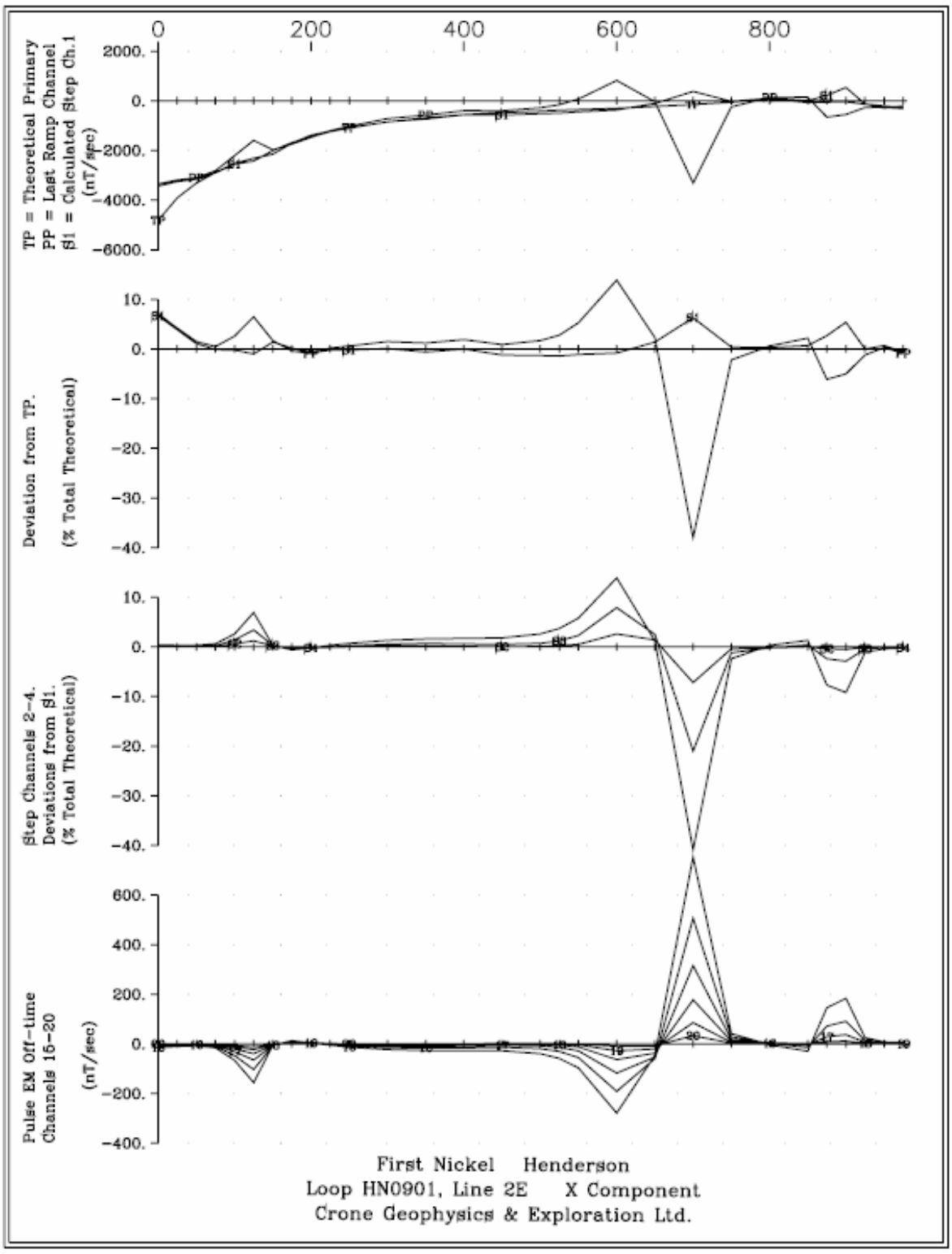

0
200
400
600
800
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
First Nickel Henderson
Loop HN0901, Line 2E X Component
Crone Geophysics & Exploration Ltd.

APPENDIX IV
STEP RESPONSE DATA PROFILES




TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
Deviation from TP.
(% Total Theoretical)
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
Pulse EM Off-time
Channels 16-20
(nT/sec)
First Nickel Henderson
Loop HN0901, Line 1E X Component
Crone Geophysics & Exploration Ltd.


TP = Theoretical Primary
PP = Last Ramp Channel
β1 = Calculated Step Ch.1
(nT/sec)
Deviation from TP.
(% Total Theoretical)
Step Channels 2-4.
Deviations from β1.
(% Total Theoretical)
Pulse EM Off-time
Channels 15-20
(nT/sec)
First Nickel Henderson
Loop HN0901, Line 2E Z Component
Crone Geophysics & Exploration Ltd.


TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
Deviation from TP.
(% Total Theoretical)
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
Pulse EM Off-time
Channels 15-20
(nT/sec)
First Nickel Henderson
Loop HN0901, Line 2E X Component
Crone Geophysics & Exploration Ltd.

APPENDIX V

CRONE INSTRUMENT SPECIFICATIONS

(refer to the attachment or paper copy)

APPENDIX V

CRONE INSTRUMENT SPECIFICATIONS

Crone Pulse EM
System Description

SYSTEM DESCRIPTION

The Crone Pulse EM system is a time domain electromagnetic method (TDEM) that utilizes an alternating pulsed primary current with a controlled shut-off and measures the rate of decay of the induced secondary field across a series of time windows during the off-time. The system uses a transmit loop of any size or shape. A portable power source feeds a transmitter which provides a precise current waveform through the loop. The receiver apparatus is moved along surface lines or down boreholes.

The transmitter cycle consists of slowly increasing the current over a few milliseconds, a constant current, abrupt linear termination of the current, and finally zero current for a selected length of time in milliseconds. The EMF created by the shutting-off of the current induces eddy currents in nearby conductive material thus setting-up a secondary magnetic field. When the primary field is terminated, this magnetic field will decay with time. The amplitude of the secondary field and the decay rate are dependent on the quality and size of the conductor. The receiver, which is synchronized to the off-time of the transmitter, measures this transient magnetic field where it cuts the surface coil or borehole probe. These readings are across fixed time windows or "channels".

SYSTEM TERMINOLOGY

Ramp Time

"Ramp time" refers to the controlled shut-off of the transmitter current. Three ramp times are selectable by the operator; 0.5ms, 1.0ms, and 1.5ms. By controlling the shut-off rather than having it depend on the loop size and current ensures that the same waveform is maintained for different loops so data can be properly compared.

The 1.5ms ramp is the normally used setting for good conductors. It keeps the early channel responses on scale and decreases the chance of overload. The faster ramp times of 1.0ms and 0.5ms will enhance the early time responses. This can be useful for weak conductors when data from the higher end of the frequency spectrum is desired.

Time Base

Time base is the length of time the transmitter current is off (it includes the ramp time). This also equals the on time of the current. Time bases are available for both 60Hz and 50Hz noise rejection respectively:

- 8.33ms (30Hz), 16.66ms (15Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)
- 10ms (25Hz), 20ms (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)

Since readings are taken during the off cycles, the time base will have an effect on the receiver channels. Normally, a standard time base is selected for the type of system and survey being used, but this can be changed to suit a particular situation. A longer time base is preferred for conductors of greater time constants, and in surveys such as resistive soundings where more channels are desired.

Zero Time Set

The term "zero time set" or "ZTS" refers to the starting point for the receiver channel measurements. It is manually set on the receiver by the operator thus allowing adjustments for the ramp times and fine tuning for any fluctuations in the transmitter signal.

Receiver Channels

The rate of decay of the secondary field is measured across fixed time windows which occupy most of the off-time of the transmitter. These time windows are referred to as "channels". These channels are numbered in sequence with "1" being the earliest. The analog and datalogger receivers measured eight fixed channels. The digital receiver, being under software control, offers more flexibility in the channel positioning, channel width, and number of channels.

PP Channel

The PEM system monitors the primary field by taking a measurement during the current ramp and storing this information in a "PP channel". This means that data can be presented in either normalized or normalized formats, and additional information is available during interpretation. The PP channel data can provide useful diagnostic information and helps avoid critical errors in field polarity.

Synchronization

Since the PEM system measures the secondary field in the absence of the primary field, the receiver must be in "sync" with the transmitter to read during the off-time. There are three synchronization methods available: cable connection, radio telemetry, and crystal clock. This flexibility enhances the operational capabilities of the system.

SURVEY METHODS

The wide frequency spectrum of data produced by a Pulse EM survey can be used to provide structural geological information as well as the direct detection of conductive or conductive associated ore deposits. The various types of survey methods, from surface and borehole, have greatly improved the chances of success in deep exploration programs. There are eight basic profiling methods as well as a resistivity sounding mode.

Moving Coil

A small, multi-turn transmitter loop (13.7m diameter) is moved for each reading while the receiver remains a fixed distance away. This method is ideal for quick reconnaissance in areas of high background conductivity.

Moving Loop

Same as Moving Coil method, but with a larger rectangular transmit loop (100 to 300 meters). This method provides deeper penetration in areas of high background conductivity, and works best for near-vertical conductors. This method can be used in conjunction with the Moving In-loop survey for increased sensitivity to horizontal conductors.

Moving In-Loop

A rectangular transmit loop of size 100 to 300 meters is moved for each reading while the receiver remains at the center of the loop. This method provides deep penetration in areas of very high background conductivity, and works best for near-horizontal conductors. It can be used in conjunction with the Moving Loop survey.

Large In-Loop

A very large, stationary transmit loop (800m square or more) is used, and survey lines are run inside the loop. This mode provides very deep penetration (700m or more) and couples best with shallow dip conductors (<45 deg.) under the loop.

Deep EM

A large, stationary transmit loop is used, and survey lines are run outside the loop. This mode provides very deep penetration, and couples best with steeply dipping conductors (>45 deg.) outside the loop.

Borehole (Z Component only)

Isolated Borehole: A drill hole is surveyed by lowering a probe down a hole and surveying it with a number of transmit loops laid out on surface. The data from multiple loops gives directional information on the conductors.

Multiple Boreholes: One large transmit loop is used to survey a number of closely spaced holes. The change in anomaly from hole to hole provides directional information. These methods have detected conductors to depths of 2500m from surface and up to 200m from the hole.

3-D Borehole

Drill holes are surveyed with both the Z and the XY borehole probes. The X and Y components provide accurate direction information using just one transmit loop. Since the probe rotates as it moves down the hole a correction is required for the X-Y data. This is accomplished in one of two ways. The measurement of the primary field from the "PP" channel can be used to apply a "cleaning" algorithm to remove most of the secondary field contamination, and compare this to theoretical values. The amount of probe rotation is then calculated, and the correction can be made. The second method involves the use of an optional orientation tool for the X-Y probe. This attachment uses dip meters to calculate the probe rotation. A third method uses another rotation tool with integrated 3-axis accelerometers and 3-axis magnetometers which can be used to correct rotation on steeply dipping holes including vertical.

Underground Borehole

Underground drill holes can be surveyed in any of the above mentioned borehole methods with one or more transmit loops on the surface. Near-horizontal holes can be surveyed using a push-rod system.

Resistivity Soundings

By reading a large number of channels in the centre of a transmit loop it is possible to perform a decay curve analysis giving a best-fit layer earth model using programs such as ARRTI or TEMIX.

EQUIPMENT

Transmit Loops

The PEM system can operate with practically any size of transmit loop, from a multi-turn circular loop 13.7m in diameter, to a 1 or 2 turn loop of any shape up to 1 or 2 kilometers square using standard insulated copper wire of 10 or 12 gauge. The multi-turn loop is made in two sections with screw connectors. The 10 or 12 gauge loop wire comes on spools in either 300m or 400m lengths. The spools can be mounted on pack frame wire winders for laying out or retrieving.

Power Supply

The PEM system has been produced in 2 varieties: high power (4.8 KW), and low power (2.4 KW). The low power PEM system normally operates with an input voltage from 24V to 240V with a maximum output current of 20 amps. For very low power surveys a 20amp/hr 24V battery can be used. The high power system operates on a continuously variable voltage input up to 240V with a maximum output current of 30 amps. The power supply requires a motor generator and a voltage regulator to control and filter the input voltage to the transmitter.

Specifications: PEM Motor Generator

- (2.4 KW) 4.5 hp Robin EH34 engine, 120V 3-phase alternator
- (4.8 KW) 11 hp Robin RGV6100 240V/120V generator (1-phase)
- cable output to regulator
- fuse type overload protection
- steel frame
- external gas tank

- optional packframe for low-power generator
- wooden shipping box
- unit weight: 33kg (2.4 KW); 81kg (4.8 KW)
- shipping weight: 47kg (2.4 KW); 100kg (4.8 KW)

Specifications: PEM Variable Voltage Regulator

- High Power
  - Continuously variable voltage output up to 240V
  - 30 amp maximum current
  - Integrated sealed aluminum case ruggedized for shipping
  - Shipping weight 18kg
- Low Power
  - selectable voltage between 24v and 120v
  - 20amp maximum current
  - anodize d aluminum case
  - padded wooden shipping box
  - unit weight 10kg; shipping weight 18kg
- fuse and internal circuit breaker protection
- cable connections to motor generator and transmitter

Specifications: PEM Transmitter

- High Power
  - Timebases
    - 8.33ms (30Hz), 10ms (25Hz), 16.66ms (15Hz), 20ms, (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)
  - ramp times: 0.5ms, 1.0ms, 1.5ms
  - operating voltage: continuously variable input up to 240V
  - output current up to 30amp maximum
  - optional current control feedback system features constant current output with ±0.1 amp precision
  - integrated sealed aluminum case ruggedized for shipping with shock protection
- Low Power
  - Timebases
    - 8.33ms (30Hz), 10ms (25Hz), 16.66ms (15Hz), 20ms, (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz)
  - operating voltage: 24v to 120v
  - output current: 5amp to 20amp
  - anodized aluminum case
  - optional pack frame
  - unit weight 12.5kg; shipping weight 22kg
  - padded wooden shipping box
- monitors for input voltage, output current, shut-off ramp, tx loop continuity, instrument temperature, and overload output current
- automatic shut-off for open loop, high instrument temperature, and overload
- fuse and circuit breaker overload protection
- three sync modes:
  - built-in radio and antenna
  - cable sync output for direct wire link to receiver or remote radio
  - crystal clock connection with built-in optical isolation

Receiver

The receiver measures the rate of decay of the secondary field across several time channels. The Crone Digital Receiver, in use since 1987 uses software control, offering a variety of programmable channel configurations.

Specifications: Digital PEM Receiver

- 26 bit (156dB) dynamic range
- operating temperature -40°C to 50°C
- built-in non-volatile memory
- optional pack frame
- unit weight 15kg; shipping weight 25.5kg
- padded wooden shipping box
- Menu driven operating software system offering the following functions:
    - controls channel positions, channel widths, and number of channels
    - Timebases: 8.33ms (30Hz), 10ms (25Hz), 16.66ms (15Hz), 20ms, (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)
    - ramp time selectable
    - sample stacking from 1 to 65536
    - automatic gain and spike rejection
    - scrolling routines for viewing data
    - graphic display of decay curve and profile with various plotting options
    - routines for memory management
    - control of data transmission
    - provides information on instrument and operating status

Sync Equipment

There are three modes of synchronization available; radio, cable, and crystal clock. The radio sync signal can be transmitted through a booster antenna from either the PEM Transmitter internal radio or through a Remote Radio.

Specifications: Sync Cable

- 2 conductor, 24awg, Teflon coated
- approx. 900m per aluminum spool with connectors

Specifications: Remote Radio

- operating frequency 27.12mhz
- 12V rechargeable gel cell battery supply
- fuse protection
- sync wire link to transmitter
- coaxial link to booster antenna
- anodized aluminum case
- unit weight 2.7kg

Specifications: Booster Antenna

- 8m, 4 section aluminum mast
- guide rope support
- ¼ wave CB fiberglass antenna
- range up to 2km
- coaxial connection to transmitter or remote radio

Specification: Crystal Clocks

- heat stabilized crystals
- 24V rechargeable gel cell battery supply

- anodized aluminum case
- rx unit can be separate or housed in the receiver
- outlet for external supplementary battery supply

Surface PEM Receive Coil

The Surface PEM Receive Coil picks up the EM field to be measured by the receiver. The coil is mounted on a tripod that can be positioned to take readings of any component of the field.

Specifications: Surface PEM Receive Coil

- ferrite core antenna
- VLF filter
- 10khz bandwidth
- two 9v transistor battery supply
- tripod adjustable to all planes
- unit weight 4.5kg; shipping weight 13.5kg
- padded wooden shipping box

Surface SQUID sensor

CSIRO 1-, 2- or 3- axis high-sensitivity superconducting sensor measures magnetic field in the sub-pT range.

Specifications: Surface SQUID sensor

- liquid nitrogen cooled, 12 hour operation between reservoir refills
- low-noise floor ~350fT/√Hz
- man-portable sensor and control system
- moving loop, or large loop survey configuration
- solid teflon non-magnetic housing
- operational temperature range: -40°C to 40°C
- total system packaged shipping weight (without liquid nitrogen): 62kg

Borehole PEM Z Component Probe

The Z component probe measures the axial component of the EM field. The Z component data is not affected by probe rotation so no correction is required.

Specifications: Borehole PEM Z Component Probe

- ferrite core
- dimensions: length - 1.6m; dia - 3.02cm (3.15cm for high pressure tested probes)
- internal rechargeable NiCd battery supply
- replaceable heat shrink tubing for abrasion protection
- pressure tested for depths 1300m, 2000m, and 2800m
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total weight 17kg

Borehole PEM XY Component Probe

The XY probe measures two orthogonal components of the EM field perpendicular to the axis of the hole. Correction for probe rotation can be achieved by mathematical theoretical primary field reduction or more commonly with an attached orientation tool sensor.

Specifications: Borehole PEM XY Component Probe

- ferrite core
- dimensions: length - 2.01m; dia - 3.02cm
- internal rechargeable ni-cad battery supply

- selection of X or Y coils by means of a switch box on surface or automatic switching with Digital receiver
- replaceable heat shrink tubing for abrasion protection
- pressure tested for depths to 2800m
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 20kg

Specifications: Orientation Tool

- 2 axis tilt sensors
- accuracy ± 0.1 deg.
- operating range -88 to -10 deg.
- dimensions: length - 0.94m; dia - 28.5mm
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 14kg

Specifications: Rotation Angle Direction (RAD) Tool

- integrated 3-axis accelerometers and 3-axis magnetometers
- dip and roll accuracy: ±0.5°, azimuth accuracy: ±1.0°
- operating range: all
- simultaneous 3D magnetometer borehole survey by station
- optional continuous logging mode
- dual 3-axis sensors provide an alternative complete borehole Dip-Azimuth measurement
- dimensions: length – 0.75m; dia – 31.8mm
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 14kg
- NiCd battery provides all-day operation
    - Length - 0.93m; dia – 28.6mm
    - Packaged in padded cover and aluminum tube
    - Shipped in padded wooden box; total shipping weight 14kg

Borehole Equipment

To lower the probe down a drill hole requires a cable and spool, winch assembly frame and cable counter. Borehole surveys also require equipment to "dummy probe" the hole before doing the survey.

Specifications: Borehole Cable

- two conductor shielded cable
- kevlar strengthened
- lengths are available up to 2600m on three sizes of spools
- shipped in wooden box

Specifications: Slip Ring

- attaches to side of borehole cable spool providing a connection to the receiver while allowing the spool to turn.
- VLF filter
- pure silver contacts

Specifications: Borehole Winch Frame

- welded aluminum frame
- removable axle
- chain driven, 3 speed gear box
- hand or optional power winding
- hand brake and lock

- optional chain-gear safety cover
- two sizes: standard for up to 1300m cable; large for longer cables
- shipped in wooden box

Specifications: Borehole Counter

- attaches to the drill hole casing
- calibrated in meters
- shipped in wooden box; total weight 13kg

Specifications: Dummy Probe and Cable

- solid steel or steel pipe
- same dimensions as borehole probe
- shear pin connection to dummy cable
- steel dummy cable on aluminum spool
- cable mounts on borehole frame
- various lengths to 2600m on 3 spool sizes.

Certificate of Analysis

Work Order: TO107784

To: **Scot Halladay**
First Nickel Inc.
Sudbury Exploration
2799-2 Belisle Drive
VAL CARON
ON P3N 1B3

Date: Oct 16, 2009

P.O. No.	:	HN
Project No.	:	EXPLORATION
No. Of Samples	:	26
Date Submitted	:	Aug 27, 2009
Report Comprises	:	Pages 1 to 2 (Inclusive of Cover Sheet)

Distribution of unused material:
Return to client:
Comments:

Preparation of samples was performed at the SGS Lakefield site

Certified By :

Gavin McGill
Operations Manager

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Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method
M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion
Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Methods marked with the @ symbol (e.g. @AAS21E) denote accredited tests

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Final : TO107784 Order: HN

Element	Au	Pt	Pd	Ni	Cu	Co	S	Ag	Mo
Method	FAI323	FAI323	FAI323	@ICP90Q	@ICP90Q	@ICP90Q	@CSA06V	@AAS12E	@ICM90A
Det.Lim.	5	10	5	0.01	0.01	0.01	0.01	0.3	2
Units	ppb	ppb	ppb	%	%	%	%	g/t	ppm
HN-01	9	10	<5	<0.01	<0.01	<0.01	0.03	0.4	96
HN-02	7	<10	<5	<0.01	<0.01	<0.01	0.04	0.3	114
HN-04	50	<10	<5	<0.01	<0.01	<0.01	0.04	1.3	2
HN-05	58	40	94	1.91	1.01	0.10	19.0	3.2	5
HN-06	17	<10	<5	<0.01	0.01	<0.01	0.13	0.5	<2
HN-07	15	<10	<5	<0.01	<0.01	<0.01	0.12	0.4	5
HN-09	418	<10	<5	<0.01	<0.01	<0.01	0.03	3.6	<2
HN-10	27	<10	<5	<0.01	0.01	<0.01	0.14	0.7	<2
HN-12	16	<10	<5	<0.01	<0.01	<0.01	0.07	0.4	<2
HN-13	16	20	<5	<0.01	0.03	<0.01	4.94	0.8	13
HN-13B	<5	<10	<5	<0.01	<0.01	<0.01	0.05	0.3	4
HN-14	12	<10	<5	<0.01	<0.01	<0.01	0.37	0.4	<2
HN-16	11	<10	<5	<0.01	<0.01	<0.01	0.28	0.5	3
HN-20	30	<10	<5	<0.01	<0.01	<0.01	1.00	1.1	4
HN-22	10	<10	<5	<0.01	<0.01	<0.01	0.04	<0.3	<2
HN-24	329	<10	<5	<0.01	<0.01	<0.01	0.04	2.3	<2
HN-24B	<5	<10	<5	<0.01	<0.01	<0.01	0.03	<0.3	<2
HN-25	5	<10	<5	<0.01	<0.01	<0.01	0.03	<0.3	2
HN-28	43	<10	<5	<0.01	<0.01	<0.01	0.03	0.6	<2
HN-30	180	<10	<5	<0.01	<0.01	<0.01	0.22	<0.3	4
HN-31	27	<10	<5	<0.01	<0.01	<0.01	0.08	0.4	5
HN-34	31	<10	<5	<0.01	<0.01	<0.01	0.05	0.4	3
HN-37	20	<10	<5	<0.01	0.01	<0.01	2.29	0.4	5
HN-38	9	<10	<5	<0.01	0.01	<0.01	2.38	<0.3	10
HN-39	19	<10	<5	<0.01	<0.01	<0.01	0.05	<0.3	<2
HN-41	9	<10	<5	<0.01	<0.01	<0.01	0.03	<0.3	<2
*Rep HN-01								0.4	
*Rep HN-39								<0.3	
*Rep HN-13							4.87		
*Rep HN-31							0.08		
*Rep HN-07	5	<10	<5						
*Rep HN-31	17	<10	<5						
*Rep HN-01				<0.01	<0.01	<0.01			
*Rep HN-22				<0.01	<0.01	<0.01			
*Rep HN-28									<2

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