WILZEL RESOURCES LIMITED

REPORT ON EXPLORATION

FOR

BENNETT - COOK PROPERTY

COOK TOWNSHIP

LARDER LAKE MINING DIVISION

ONTARIO

(OM86-6-P-59)

Robert A. Bennett, MSc., PEng.

December 31, 1986.

WILZEL RESOURCES LIMITED

REPORT ON EXPLORATION FOR BENNETT-COOK PROPERTY

SUMMARY

Preliminary Exploration Work was completed over WILZEL RESOURCES LIMITED's "***Bennett-Cook Property***" located in Cook Township, Larder Lake Mining Division during 1986. The Property is underlain by Kenojevis Group iron-poor and iron-rich tholeiitic basalts, dacitic tuffs, and a north-striking Matachewan diabase dyke. The Ross Mine Fault, an important locus for gold mineralization at Pamour'e Ross Mine just 2.5 miles to the northwest, disrupts the stratigraphy through the center of the Property. Other, parallel structures are also indicated.

Electromagnetic cross-over anomalies that parallel the volcanic stratigraphy are interpreted to be caused by sulphide-mineralized flow top breccias and horizons, or conductive structures; all of which could be auriferrous. A large magnetic low with a co-incident EM anomaly traverses the southern portion of the Property. Approximately 400 feet south of this target area, a large mineralized float returned assays of 0.200 troy ounce per ton Gold and 0.61 troy ounce per ton Silver. Several other untested targets warrent follow-up exploration.

Future exploration should first focus on mineralized and altered structural zones and/or felsic intrusives proximal to the Ross Mine Fault and other parallel structures. Since the target sought has only limited strike extension, the best "next" exploration tool to test for gold mineralizatioin would be reverse circulation overburden drilling and sampling. Collars should be centered near the northwest striking anomalies. Follow-up exploration for targets that parallel the stratigraphy could best be tested by diamond drilling.

An Exploration Program designed to test the Bennett-Cook Targets could expect to cost $ 200,000 , and should include:

Reverse Circulation Overburden Drilling	$ 35,000
Diamond Drilling (4,000 ft)	$ 120,000
Assays, Sample Handling, etc	$ 15,000
Truck, Board, Accomodations, etc	$ 10,000
Supervision, Personnel, Reports, etc	$ 20,000
TOTAL =	$ 200,000

WILZEL RESOURCES LIMITED

REPORT ON EXPLORATION FOR BENNETT-COOK PROPERTY

TABLE OF CONTENTS

Report on Exploration for BENNETT-COOK PROPERTY

INTRODUCTION

Prospecting, Geological Mapping, Magnetometer, two VLF-EM, and Radiometric Surveys were completed over WILZEL RESOURCES' "Bennett-Cook Property" in Cook Township. The Property consists of 36 contiguous staked mining claims numbered:

L.799711 through L.799731 inclusive
L.799733
L.799736 and L.799737 inclusive
L.799739 and L.799740 inclusive
L.858980 through L.858983 inclusive
L.884189 through L.884194 inclusive

that are registered in the name of Wilzel Resources Limited, 300 Elm Street West, Sudbury, Ontario, P3C 1V4.

LOCATION and ACCESS

The claims are located in northwestern Cook Township, Larder Lake Mining Division, approximately 10 miles southeast of the Town of Matheson and about 2 miles southeast from the mining community of Holtyre, home of Pamour's ROSS MINE. Access to the northern end of the claim group is by gravel road that leads due south from Holtyre and then by foot for .5 miles to west end of the north baseline. Access to the southern portion of the claims is by the paved Lava Mountain Lodge Road east from Ramore and then north and east along gravel roads to the west end of the south baseline.

A property and general location map is provided overleaf.

Guibord Twp.

VI

V

IV

Playfair

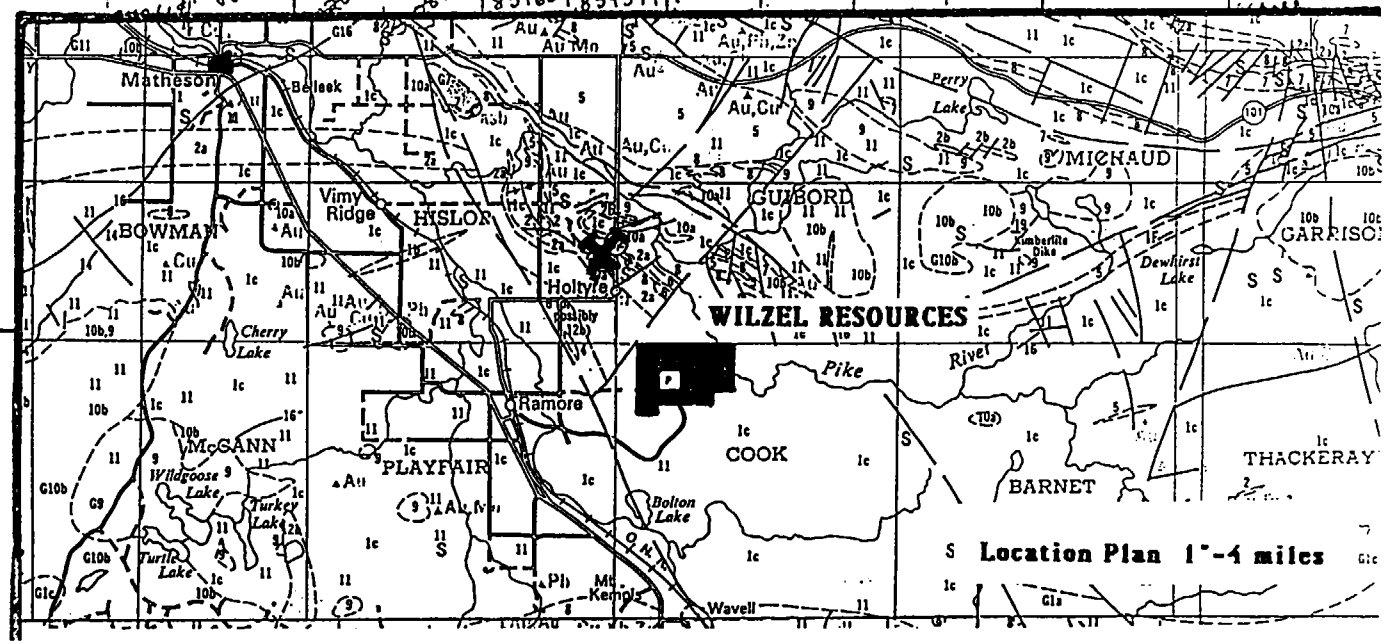
WILZEL RESOURCES LIMITED

PROPERTY AND LOCATION PLAN

"BENNETT-COOK PROPERTY"

Cook Township, Larder Lake Mining Division
Ontario

Claim Map 1"=1/2 mile



GENERAL GEOLOGY and HISTORY

The general geology of the Cook Township area is illustrated and briefly described on the recently released "Precambrian Geology of the Ramore Area", Map P. 2860 by L. S. Jensen of the Ontario Geological Survey. He describes the property area as being underlain by east-southeast trending, south facing alternating bands of Iron-rich and Magnesium-rich Tholeiitic Basalt Flows of the KENOJEVIS GROUP. The pile is cut by a few north-trending Matachewan-type diabase dykes, and the northwest striking Ross Mine Fault is interpreted to cut the through the center of the claim group.

In 1985, R. A. Bennett completed a magnetometer survey over part of the claim group (18 claims). A search of the Assessment Files in Kirkland Lake Resident Geologist's office shows that no other exploration work has been recorded on any of the claims. The only evidence of earlier exploration work is a few very old pits exposing quartz-carbonate veins with minor pyrite, chalcopyrite and specularite in claims L.799730 and L.884192. This lack of past work seems very unusual, especially since the property is so proximal to a producing gold mine. Since the claims lie just north of the Ramour Radar Station, a military installation that was closed and dismantled only a few years ago, it is likely that much of the area was withdrawn from staking and has only been recently re-opened [1982 - 84 ?].

EXPLORATION MODEL

The Bennett-Cook Property was acquired to test for economic gold mineralization utilizing models developed from both the Ross Mine and the Holt-McDermott Mine.

Pamour's Ross Mine is located in southeastern Hislop Township, approximately 2.5 miles northwest of the Bennett-Cook Property. The Ross has been in continuous production since 1936 and has yielded almost one million ounces of gold (at an average grade of .17 opt) and 1.5 million ounces of silver (at an average grade of .28 opt) to date. Pamour is currently deepening the mine, increasing its production rate, and considering building a new mill on site. Recent re-mapping of the Mine Area by D. Troop of the OGS has demonstrated that the deposit is wholly enclosed within variably altered

and sheared mafic lavas (likely Kenojevis Group). Ore shoots and veins are structurally controlled by northwest/southeast shear zones and faults (in part the Ross Mine Fault). Iron carbonate, sericite, and hematite alteration are important indicators for gold mineralization.

The Holt-McDermott Mine is owned by American Barrick and is located in Holloway Township, approximately 20 miles to the east-northeast. Recent ore reserves estimates at the McDermott Mine exceed 3 million tons grading .19 ounces per ton. Construction of a $50 million mine/mill complex is currently underway (Northern Miner, Dec15/86). The ore deposit is enclosed within a brecciated and highly altered (silicification, pyritization, albitization) mafic intrusive body within a mafic volcanic pile near the McKenna Fault. Regional geological and airmagnetic maps strongly suggest that the strike extensions of the same stratigraphy pass through the Bennett-Cook Property.

EXPLORATION WORK

GRIDDING

A grid of picket lines totalling 31.5 miles and 3.0 miles of Baseline was cut over all the claims during March - July 1985 and May - July 1986. The north baseline strikes due east-west and follows the surveyed township boundary between Cook and Guibord Townships. The south baseline follows the boundary and an old winter road between concessions V and VI in Cook Township. All the crosslines are perpendicular to the baselines and are spaced at 400 ft intervals. Pickets were chained and set every 100 feet along all the cut lines.

Base Stations were established at 2+00 E on the north and south baselines for geophysical survey tie-in purposes.

GEOLOGICAL SURVEY

Geological and Topographical mapping of the claims was completed during

May, July, and September 1986 by the author, J. Smyth and assistant J. Fortin. The grid lines were used for mapping control, but in areas of outcrop, many pace and compass traverses were made in-between to ensure every outcrop was charted. A representative suite of rock specimens [totalling 147] was collected from most of the bedrock exposures and is stored at WILZEL's office in Matheson. Each specimen was cut in half with a diamond saw and closely examined with the aid of a binocular microscope.

Bedrock exposure approximates less than 5% of the claim area and is limited to only the very southern portions of the claim group. The bulk of the claims is buried by Pleistocene clay deposits and covered by stunted wet spruce forest and cedar swamp. The Pike River flows north through the northeastern part of the property. The Geology is illustrated on **Map BC-1**, in pocket.

UNIT 4. = Matachewan Diabase

The youngest rock exposed in the map area is a north-south trending, vertically dipping Matachewan-type quartz diabase dyke (line 70E, 53-70S). The diabase is medium to coarse grained with sharp, very fine grained and chilled contacts. It is quite massive with wide-spaced joint sets and it weathers a rusty brown colour for the most part, while the contacts are usually grey. All of the nine suite specimens collected show good diabasic textures. The diabase consists of plagioclase feldspar, chlorite (after amphibole), magnetite, minor quartz, and very minor pyrite. Some of the feldspars form large "clots" or patches that can approach 1 inch in diameter.

UNIT 3. = Dacite Crystal Tuff / Porphyry - KENOJEVIS GROUP

A massive, 100 ft thick, east-southeast striking (104 degrees) and vertically dipping interflow unit of dacitic crystal tuff is well exposed in claim L.884190. It has euhedral to subhedral, medium to coarse grained feldspar crystals in an aphanitic greenish-grey matrix. Occasional rounded quartz grains were also noted as well as minor chlorite, magnetite, and pyrite. Only one lithic clast of chloritic basalt was seen within the tuff unit (70+70E, 55S). The contacts between the tuff and the enclosing iron-rich basaltic lavas are very sharp and marked by a weak shear that is quite highly altered. The tuff typically weathers a chalky white colour. Several of the twelve

suite specimens show strong hematite alteration (Line 62E, 52S) which has turned both the feldspar crystals and the matrix a distinct brick red colour. Some of the outcrop exposures, especially those hematitized, resemble more a massive porphyry unit than a tuff.

UNIT 2. = Iron-Rich Tholeiitic Basalt - KENOJEVIS GROUP

Iron-rich tholeiitic basalts are well exposed in the southern portions of the map area. They are typically fine to medium grained, green to grey-green in colour, usually quite massive and unaltered, having suffered only lower greenschist metamorphism. These basalts occur as massive featureless flows and as pillow lavas. The pillowed units show an east-southeast elongation with pillow configuration suggesting stratigraphic tops are to the south. The pillows usually contain amygdules that are filled with chlorite and/or calcite. Interpillow material is highly choritic, often hyaloclastite-rich, and contains disseminated pyrite. Flow tops can be marked by distinct flow top breccias. Individual flows range in thickness from 20 feet to over 300 feet. The iron-rich basalt is characterized in the field by its rusty weathered surface and its high magnetic susceptibility.

Several minor, milky-white quartz-carbonate veins, patches (swets), and fracture fillings were found within the basaltic lavas. Those associated with fracturing usually contain minor disseminated pyrite, specularite, and rare chalcopyrite and galena. The .5 to 1.5 foot wide quartz-carbonate vein at 57E, 61+50S was pitted (12'x10'x10' deep) by past explorers. A 1.2 ft channel sample of the Vein returned 12 ppb Gold. The enclosing wall rock for most of the quartz areas is very rusty and weakly sheared to brecciated.

UNIT 1. = Iron-Poor [Mg-rich] Tholeiitic Basalt - KENOJEVIS GROUP

Iron-poor tholeiitic basalt flows are well exposed and interlayered with the iron-rich basalts in the southern portions of the map area. The iron-poor lavas are characterized in the field by their greyish weathered surface and very low magnetism. They are fine to locally medium grained, grey-green in colour, and occur as massive, pillowed and variolitic units. The variolitic lavas (8E, 73S) occur as irregular patches, are fine grained and dark green with rounded lighter varioles ranging from pinhead size to more than 1 inch in diameter.

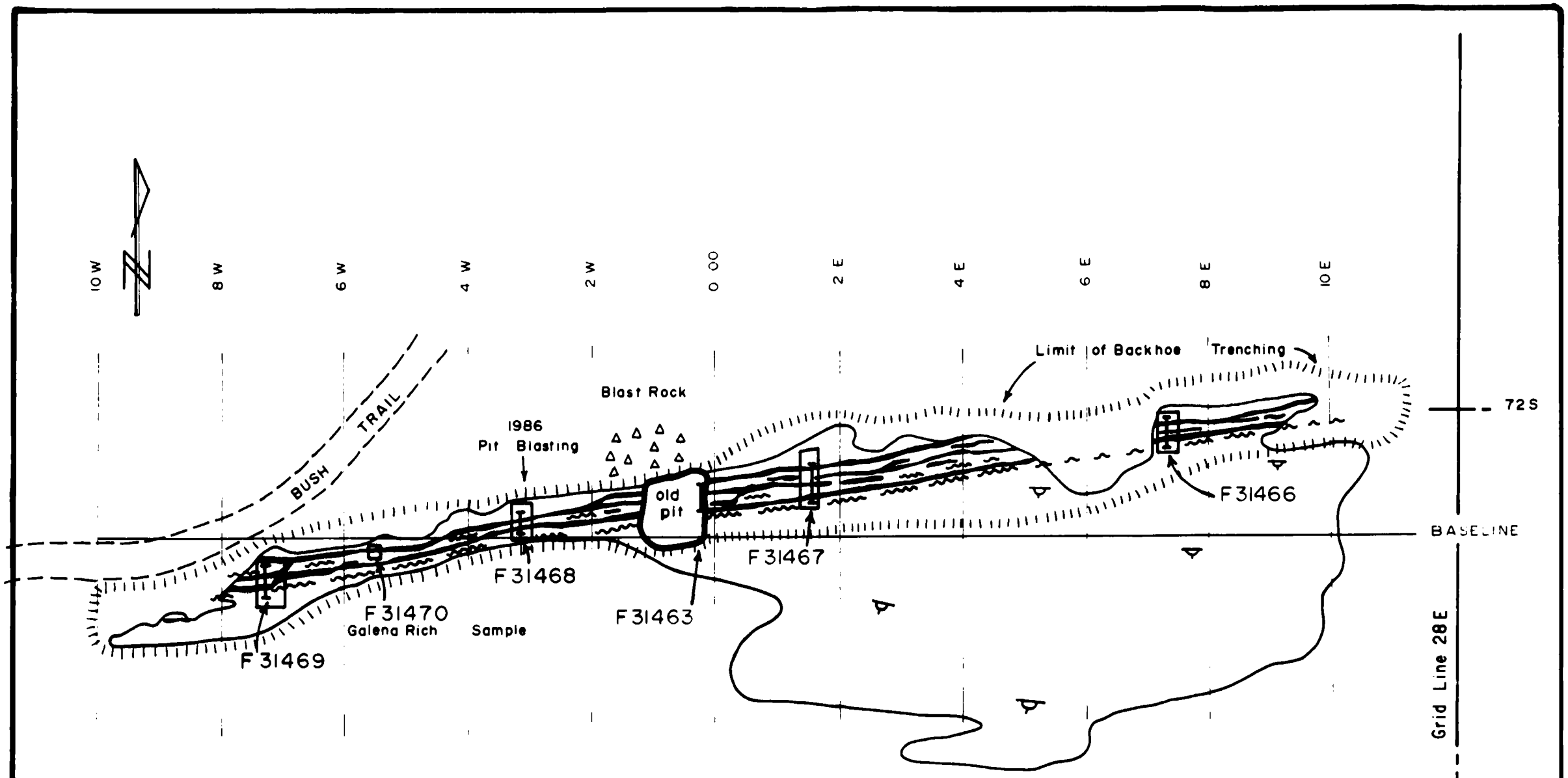
A 2' to 4' wide east-west striking and vertically dipping quartz-carbonate vein within an 8 to 12 ft wide brecciated and sheared zone occurs at 26E,72S. This structure has been traced for more than 600 feet in strike length. The vein contains minor pyrite, galena, and specularite, with rare chalcopyrite. An old, overgrown pit (10'x12'x12' deep) by past explorers exposes part of the structure. During the 1986 exploration program, the Vein was further uncovered by backhoe trenching (Wilson's Backhoe Service of Matheson) and exposed by plugger drilling and blasting. Several channel and grab samples of the zone were assayed and returned background values between 10 ppb and 45 ppb Gold. A galena-rich sample of the Vein was assayed for Silver and returned 1.60 ppm Ag. The Showing Plan Map overleaf illustrates the showing area, the trenching, the sample locations, and assay results. A large rusty **float** found approximately 600 east of the showing area which carried 2% disseminated pyrite in a highly iron-carbonatized and silicified lava with a few tiny quartz veinlets returned an assay of **.200 troy ounce per ton Gold and .61 troy ounce per ton Silver.** Glacial straie suggest the ice direction for the area is almost due north

MAGNETOMETER SURVEY

A Magnetometer Survey was completed over part of the Property (18 claims) during July 1986 by the author and R. Wright. The remaining 18 claims were surveyed in 1985 by the author; but, the data has been incorporated into this report for continuity purposes. A Sharpe Instruments MF-1 Fluxgate Magnetometer was used during both surveys and readings were taken every 100 feet along all the cut lines. In all, 1522 stations were read. Daily magnetic readings were tied to the base stations and corrected for diurnal drift. In addition, secondary base stations along the baselines at every crossline were re-read as each 'loop' was completed.

Results

The results of the Magnetometer Surveys are plotted on Map **BC-2,** in the back pocket. Diurnal variations were a maximum of 160 gammas for any given day and 240 gammas for the entire survey. A summary of the MF-1's specifications is appended.



Sample #		Au	Ag
F31463	=	trcce	-
F31466	=	45 ppb	-
F31467	=	22 ppb	-
F31468	=	12 ppb	-
F31469	=	10 ppb	-
F31470	=	11 ppb	1.6 ppm
F31472 300F	=	18 ppb	2.2 ppm
F31473 600F	=	0.200 oz/ton	0.61 oz/ton

REGISTERED PROFESSIONAL ENGINEER
R. A. BENNETT
PROVINCE OF ONTARIO

WILZEL RESOURCES LTD.

BENNETT - COOK PROPERTY

AREA OF TRENCHING

Scale: 1" = 20'

Dec 1986

The range of magnetic susceptibilities for the property falls between +180 and +4300 gammas, with the average background approximating 950 gammas. The magnetic contours show a marked west-northwest trend that represents the strike of the underlying volcanic stratigraphy. The alternating bands of magnetic highs and lows are caused by the varying contents of iron in the tholeiitic basalts. Some of the contours are slightly skewed to the north, suggesting the formations dip steeply north. Some of the broad magnetic lows might be caused by interflow sedimentary horizons.

The east-west magnetic trend in claims L.884192 and L.884193 occurs in an outcrop area and could reflect more the outcrop-overburden configuration than the bedrock geology. The sharp north-northwest "break" in the magnetic in claims L.799719, 20 and 22 is interpreted to be caused by the Ross Mine Fault. The sharp magnetic highs at 14E, 10S and 38E, 15S could be caused by syenitic plugs as is found near Pamour's Ross Gold Mine, just 2.5 miles to the northwest.

VLF - ELECTROMAGNETIC SURVEYS

Two electromagnetic surveys were completed over the property between May and July, 1986 by the author and W. Fuller. A Phoenix VLF-2 EM Unit was used and readings were taken every 100 feet along all the grid lines. At each station, the DIP ANGLE, the PHASE ANGLE, and the FIELD STRENGTH were measured and recorded. The first station [F1] used was that at Cutler Maine (**24.0 KHz**) to test for easterly striking structures and/or conductive zones that might parallel the volcanic stratigraphy. The Culter station was usuallly read on Tuesday, Wednesday, and Thursday. The second station [F2] read was that at Annapolis, Maryland (**21.4 KHz**) to test for northerly striking structures such as the Ross Mine Fault and/or conductive zones. The Annapolis station was usually read on Friday, Saturday and Monday. The claims were traversed separately for each survey. All the dip angles are plotted at one inch to 40 degrees. The field Strength readings were tied into the base stations on a daily basis as the individual station strengths showed considerable variance during the course of the work.

A summary of the Phoenix VLF-2 EM Unit's specifications is appended.

Results - VLF-EM Surveys

The results of the two electromagnetic surveys are plotted on:

for F1 - Map **BC-3** - Cutler, Maine
for F2 - Map **BC-4** - Annapolis, Maryland

in the back pockets. A total of 1,509 stations were read for each survey.

The cross-over anomalies have been categorized into two groups; those having high field strengths and those with low field strengths. As a general rule of thumb, high field strength anomalies usually reflect bedrock features whereas the low field strength anomalies typically are caused by overburden effects.

MAP BC-3

For the F1 Survey, several strong cross-over anomalies were found. Most trend west-northwesterly and likely reflect bedrock features. All the significant anomalies and their interpreted causes are tabulated below.

Anomaly A, A1 - occur along the south flank of a mag high (top) and likely are caused by a sulphide-rich flow top breccia. The southerly deflection at the east end of Anomaly A could locate the Ross Mine Fault. Follow-up is recommended.

Anomaly B - falls within a mag low area and could represent sulphides in an interflow horizon. Follow-up is recommended.

Anomaly C,C1 - are similar to Anomaly A and likely are caused by a sulphide-rich flow top breccia. Follow-up is recommended.

Anomaly D - is associated with a subtle mag feature and likely represents a more deeply buried sulphide horizon or contact fault.

Anomaly E, E1 - are similar to Anomaly D and should be further investigated.

Anomaly F - occurs along the south flank of a mag low and could represent sulphides. Follow-up is warranted.

Anomaly G - is similar to Anomalies E_1 and F.

Anomaly H - is locally a strong cross-over in a mag low area and could be due to a structure or sulphide mineralization. Follow-up is recommended.

The other single-line anomalies typically have lower field strengths and are likely due to overburden contrasts.

Map BC-4

For the F_2 Survey, only a few cross-over anomalies with medium to high field strength were found. They trend north-northwesterly and likely represent weakly conductive structures in the bedrock. Those interpretable are tabulated below.

Anomaly V - is a medium to weak anomaly that falls along a subtle magnetic discontinuity that could be a parallel structure to the Ross Mine Fault.

Anomaly W,W_1 - are medium to low strength cross-overs that fall along an obvious discontinuity in the magnetic trends = ROSS MINE FAULT.

Anomaly X - is a strong anomaly that falls along a subtle mag break and could locate a parallel structure to the Ross Mine Fault.

Anomaly Y - is a medium to high strength cross-over associated with yet another subtle mag irregularity.

Anomaly Z - is a strong isolated cross-over in the middle of a cedar swamp. Its cause is unknown.

The several other single-line cross-over anomalies have low field strengths and are interpreted to be caused by overburden contrasts.

RADIOMETRIC SURVEY

A Radiometric Survey was completed over the claim group during May and July, 1986 by J. Smyth and R. Wright. The purpose of the survey was to assist the geological interpretation and to test for potassium-rich felsic intrusions and/or alteration zones that can be associated with gold mineralization events. A McPhar TV-1A Radiation Spectrometer was used and the total field readings were taken every 100 feet along all the grid lines. In total, 1502 readings were recorded. All the readings were tied into the base stations and corrected for diurnal drift using the time linear method. The general topography and outcrop areas were also charted. A summary of the TV-1A's specifications is appended.

Results

The total field readings ranged from 1 to 15 counts per minute for the survey area, Map **BC-5**, in pocket. These can be grouped into distinct populations based on the surface conditions. Low, wet areas such as alder, spruce and cedar swamps always had the lowest readings of 1 to 3 cpm. Spruce forest and mixed spruce and poplar forest typically range between 4 and 9 counts per minute. The highest readings of 8 to 15 cpm always fell over areas of poplar bush where the lacustrine clay deposits are thickest and closest to the surface. This reflects the higher potassium concentrations in the clays.

In the outcrop areas, readings over the basalt and diabase exposures ranged from 2 to 5 counts per minute. The highest readings over outcrop occured at 62E, 53S and 70E, 55S where feldspathic, weakly heamatite and sericite altered, felsic tuffs are exposed.

CONCLUSIONS and RECOMMENDATIONS

Preliminary exploration work that included geological mapping, prospecting, trenching, and geophysical surveys was completed over WILZEL RESOURCES LTD's "Bennett-Cook Property" located in Cook Township, Larder Lake Mining Division, Ontario. The results have shown that the Property is underlain by Kenojevis Group iron-rich and iron-poor tholeiitic basalts and dacitic tuffs that have been cut by a Matachewan diabase dyke. The Ross Mine Fault cuts

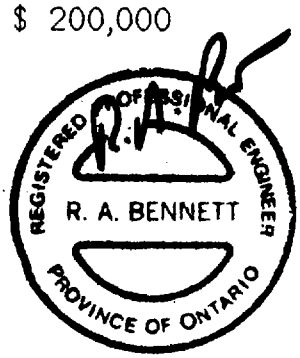
through the center of the Property and is marked by an electromagnetic cross-over anomaly and a sharp disruption of the magnetic trends. At least 3 other parallel structures are indicated for the Bennett-Cook Property as well.

Electromagnetic anomalies that parallel the volcanic stratigraphy could locate mineralized flow top breccias, sulphide-rich horizons, and/or conductive structures. Some of these cross-over anomalies could be auriferrous. The large magnetic low that traverses the center of the claim group could , in part, be caused by a major interflow unit. The co-incident cross-over anomaly (H) could be auriferrous. The auriferrous float sample lies approximately 400 south of Anomaly H.

Future exploration should first focus on mineralized and altered structural zones and/or felsic intrusives proximal to the Ross Mine Fault. Since the target sought has only a limited strike length, the best 'next' exploration tool to test for gold would be reverse circulation overburden drilling. Collars should be centered near the northwest/southeast EM anomalies. Follow-up exploration for the targets that parallel the stratigraphy could best be tested by diamond drilling.

An Exploration Program designed to test the Bennett-Cook Targets could expect to cost $ 200,000, and should include:

Reverse Circulation Overburden Drilling		$ 35,000
Diamond Drilling (4,000 ft)		$ 120,000
Assays, Sample Handling, etc		$ 15,000
Truck, Board, Accomodations, etc		$ 10,000
Supervision, Personnel, Reports, etc		$ 20,000
TOTAL	=	$ 200,000



Sudbury, Ontario

R. A. Bennett, PEng.
December 31, 1986

REFERENCES

1. - Jensen, L. S. - 1985
Precambrian Geology of the Ramore Area, OGS Prliminary Maps 2860 and 2861.

2. - Ploeger, F. etal - 1979
Cook Township, OGS Preliminary Map P 829 - KL Data Series .

3. - Prest, V. K. - 1956
Geology of Hislop Township, ODM Vol LXV, Part 5 & Map 1955-5.

4. - Troop, D. G - 1986
Multiple Orebody Types and Vein Morphologies, Ross Mine, District of Cochrane in OGS Summary of Field Work,Miscellaneous Paper 132.

5. - Workman, A. W. - 1985
The McDermott Gold Deposit, Barrick Resources Corporation.

CERTIFICATE OF QUALIFICATIONS

I, Robert A. Bennett do herby certify that:

1. - I reside at 577 Pearson Street, Sudbury, Ontario, P3E 4M9.

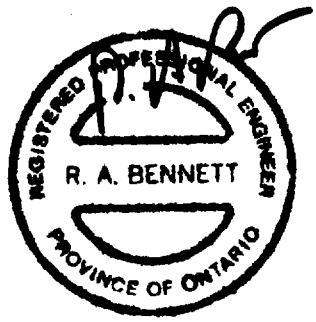
2. - I am a member in good standing of the:
   -Association of Professional Engineers of the Province of Ontario
   -Canadian Institute of Mining and Metallurgy, and
   -Prospectors and Developers Association.

3. - I am a graduate of the Haileybury School of Mines' two year Mining Technology course [1967]; and I hold an honours Bachelor of Science Degree in Geological Engineering [1970], and a Masters of Science Degree in Geology [1971] from Michigan Technological University.

4. - I have been continuously engaged in my profession since graduation.

5. - The foregoing report entitled "**REPORT ON EXPLORATION FOR BENNETT-COOK PROPERTY**" for **Wilzel Resources Limited** dated December 31st, 1986 is based on:
   a) My knowledge of the Property through direct supervision of all the operations described herein,
   b) Published government reports and maps, and unpublished private reports by myself and other professionals as listed in the references, and
   c) My personal knowledge of the Abitibi Greenstone Belt from 16 years of continuous geological work throughout the area.

6. - I am a director and shareholder in private company WILZEL RESOURCES LIMITED.



Dated this 31st day of
December in the Year
1986 at Sudbury, Ontario.

Robert A. Bennett, PEng.

Consulting Geological Engineer

APPENDIX

1. Sharpe Instruments MF-1 Fluxgate Magnetometer

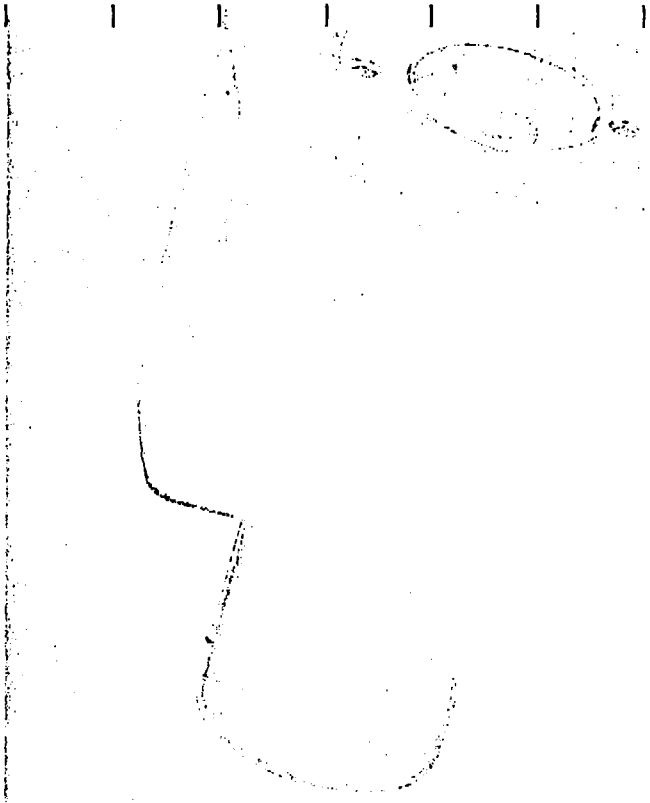
2. Phoenix VLF-2 EM Unit

3. McPhar TV-1A Radiation Spectrometer

MF-1 FLUXGATE MAGNETOMETER

A first order fluxgate type vertical component magnetometer. Advanced transistorized circuitry and extensive temperature compensation is the core of its accuracy comparable to precision tripod mounted Schmidt type magnetometers.

It is a hand held instrument and needs only coarse levelling and no orientation. Features such as direct reading of gamma values and the possibility of accurate zero setting at base stations ensure simplicity of operation and higher field economy.



APPENDIX 1

MF-1 MAGNETOMETER

The Model MF-1 Fluxgate Magnetometer is designed for accurate ground surveys in the mining industry as well as a basic component for air surveying by small aircraft. Technical data and comparison charts available on request.

SPECIFICATIONS

MAXIMUM SENSITIVITY:	20 gammas (per scale division) on 1000 gamma range.
READABILITY:	5 gammas (¼ scale division on 1000 gamma range.
RANGES: (FULL SCALE)	1,000 gammas 3,000 gammas 10,000 gammas 30,000 gammas 100,000 gammas
MAXIMUM RANGE:	± 100,000 gammas
LATITUDE ADJUSTMENT RANGES:	10,000 to 75,000 gammas, Northern hemisphere convertible to: 10,000 to 75,000 gammas, Southern hemisphere or ± 30,000 gammas equatorial.
DIMENSIONS: (INCLUDING BATTERY CASE)	7" x 4" x 16"
WEIGHT: (INCLUDING BATTERY CASE)	9 lbs.
BATTERIES:	12 Flashlight Batteries ("C" cell).

MODEL MF–1 FLUXGATE MAGNETOMETER

Operation of the Meter

1.) Remove all magnetic objects from operator's person, e.g. keys, coins, buttons, etc. Zippers should be non-magnetic.

2.) Connect Battery Cable, Figure 6, to magnetometer receptacle on bottom of main housing. This connection must be secured by lock-ring.

3.) Attach battery pack (Fig. 5) either in back pocket or on belt behind operator.

4.) Switch on Main Switch (Fig. 3) to first position, which is the battery check. Indicating meter needle should rest within red arc. Replace batteries if reading below red arc.

5.) Latitude Adjustment - To adjust the latitude setting to read 0 gammas is a simple operation.

a. After indicating meter needle (fig.2) shows voltage okay, switch Main Switch (Fig.3) to next position which is the positive reading with the Range Switch (Fig. 1) set at the 100K step. (100,000 gamma range)

b. If needle goes full arc to left past 0, switch main switch (Fig. 3) to last position which is the negative reading range.

c. Figures 10 and 9 indicate the latitude adjustment controls - Coarse control is Fig. 10 and Fine control is Fig. 9. If scale reading is more than ± 7,000 gammas rotate coarse control (Fig. 10) in steps of 7,000 and switch range down to more sensitive range until scale is reading less than ± 7,000 gammas. Remove protection cap on fine control (Fig. 8) by pulling straight off. Then rotate fine control switch (Fig. 9) until scale reading is 0 gammas. Check reading by switching main switch from positive to negative (or vice versa) to ensure 0 reading both polarities. Replace fine control protection cap.

6.) Calibration - This meter is calibrated at the factory prior to delivery. Field tests show that only by severe misuse (i.e. constant dropping, rough handling, improper shipping) can the calibration of this instrument be effected. It is therefore not necessary to recalibrate in the field and if through misuse calibration becomes necessary, the meter should be returned to the factory. *All parts are guaranteed against defect for a period of one year and will be replaced free of charge.

* This guarantee does not apply to batteries or the connecting cable.

7.) Trouble Shooting - Under normal conditions the only field problem will be batteries or the connecting cable. If after completion of step (4) under "Operation of the Meter" the meter still does not indicate voltage, check cable for faulty connection or broken cable. If after this procedure, meter still does not indicate current, return unit immediately to your supplier or directly to the factory.

Regional Latitude Settings

Normally each unit is pre-set at the factory for the Northern Hemisphere. However, if the unit is required for Equatorial or Southern Hemispheric regions, the unit will be pre-set at the factory for these areas. If a unit is going from one of the above regions to another, reset instructions will be supplied on request.

Field Procedure

1.) Select Base Control station. This station should be selected in relation to one or both of two things.
   1. General magnetic background (i.e. not anomalous) if possible.
   2. Accessibility in relation to area being surveyed.

2.) Set magnetometer to read between 0 and 200 gammas. (For contouring and to avoid small negative readings, an arbitrary value of 1000-800 gammas should be added to all readings.

3.) For effective diurnal control, control stations should be permanently marked and readings should be taken at the same height and location each time; a simple method is to have the control stations' pickets hammered into the ground with the top about waist height. Rest the probe end of the magnetometer on the top of the picket. In barren country, a mound or large piece of rock or some other material should be used.

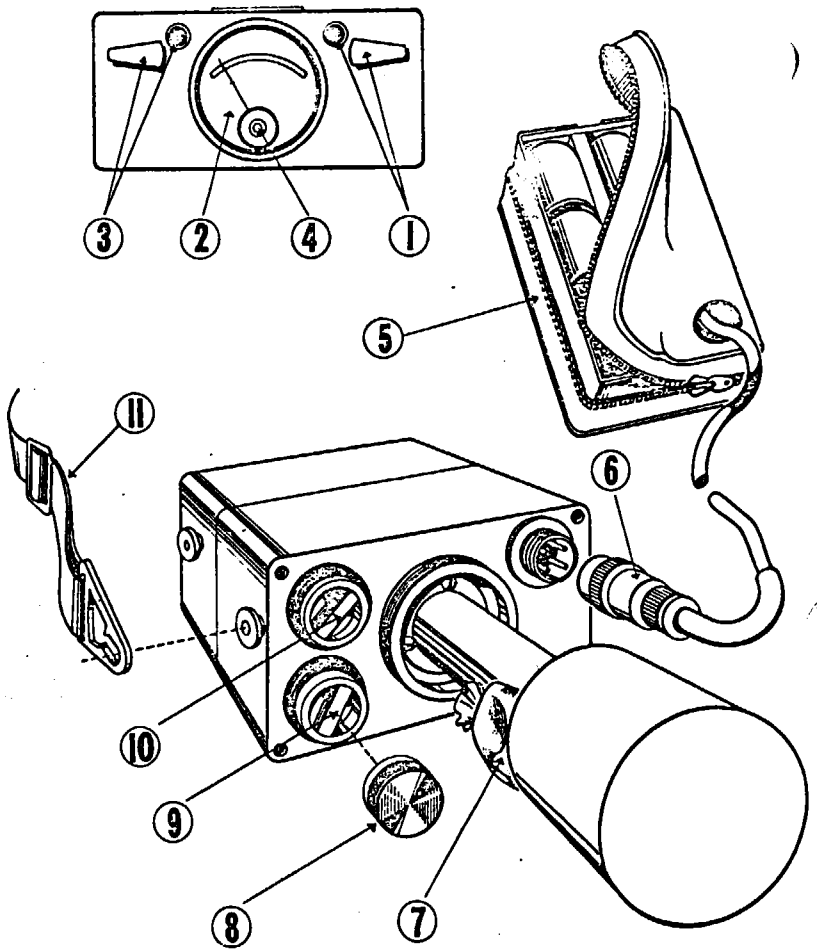
4.) Continue survey the same as any other method of magnetic surveying.

5.) Remove and replace Silica-Gel (Fig.7) when deteriorated. The silica gel is located in the removable probe housing.
The Silica bag should not be placed on the bottom of the probe housing.

6.) Do not pass powerful magnet closer than 1 foot to instrument.

7.) During winter operation, batteries should be kept in pocket or under parka.

***Warning: - Do not leave batteries in battery case when unit is being stored. Always be sure meter is turned off after use. Disconnect battery cable when meter not in use.



1. Range Switch
2. Meter
3. Main Switch
4. Level
5. Battery Pack
6. Battery Connector
7. Silica Gel
8. Protection Cap
9. Latitude Adjustment Control Fine
10. Latitude Adjustment Control Coarse
11. Carrying Strap

MODEL MF–1 FLUXGATE MAGNETOMETER

E. J. SHARPE INSTRUMENTS OF CANADA LIMITED
P.O. Box 279, Willowdale, Ontario

VLF-2

APPENDIX 2

Electromagnetic Unit

- Lightweight, low battery drain, rugged, simple to operate
- Two independent channels
- Each channel may select any station between 14.0 and 29.9 kHz
- Single crystal used for all frequencies
- Locking clinometer provides tilt-angle memory
- Superheterodyne detection and digital filtering provide extremely high selectivity and noise rejection

Military and time standard VLF transmitters are distributed over the world. These stations are used for geophysical EM surveying thus eliminating the need for a local transmitter and permitting one-man operation.

To ensure that a station excites the prospective conductor, two stations at approximately right angles are used during a survey (see data on back).

The choice of 160 frequencies in the range 14.0 to 29.9 kHz permits the use of a local EM transmitter when no suitable regular VLF station is available.

PHOENIX

PHOENIX GEOPHYSICS LIMITED

Geophysical Consulting and Contracting, Instrument Manufacture, Sale and Lease.

Head Office: **200 Yorkland Blvd. Willowdale, Ont., Canada M2J 1R5. Tel: (416) 493-6350**
310 - 885 Dunsmuir St. Vancouver, B.C., Canada V6C 1N5. Tel: (604) 684-2285
4690 Ironton St. Denver, Colorado, U.S.A. 80239. Tel: (303) 373-0332

Specifications

Parameter Measured	:	Orientation and magnitude of the major and minor axes of the ellipse of polarization.
Frequency Selection, Front Panel	:	Dual channel, front panel selectable (F1 or F2) each with independent precision 10-turn dial gain control.
Frequency Selection, Internal	:	F1 and F2 can be selected by internal switches within the range 14.0 to 29.9 kHz in 100 Hz increments.
Detection And Filtering	:	Superheterodyne detection and digital filtering provide a much narrower bandwidth and thus greater rejection of interfering stations and 60 cycle noise than conventional receivers.
Meter Display	:	2 ranges: 0 to 300 or 0 to 1000. Background is typically set at 100. Meter is also used as dip angle null indicator and battery test.
Audio	:	Crystal speaker. 2500 Hz used as null indicator.
Clinometer	:	$\pm 90°$, $+0.5°$ resolution. Normal locking, push button release.
Battery	:	One standard 9v transistor radio battery. Average life expectancy - 1 to 3 months (battery drain is 3 mA)
Temperature Range	:	-40° to + 60° C.
Dimensions	:	8 x 22 x 14 cm (3 x 9 x 6 inches).
Weight	:	850 grams (1.9 pounds).

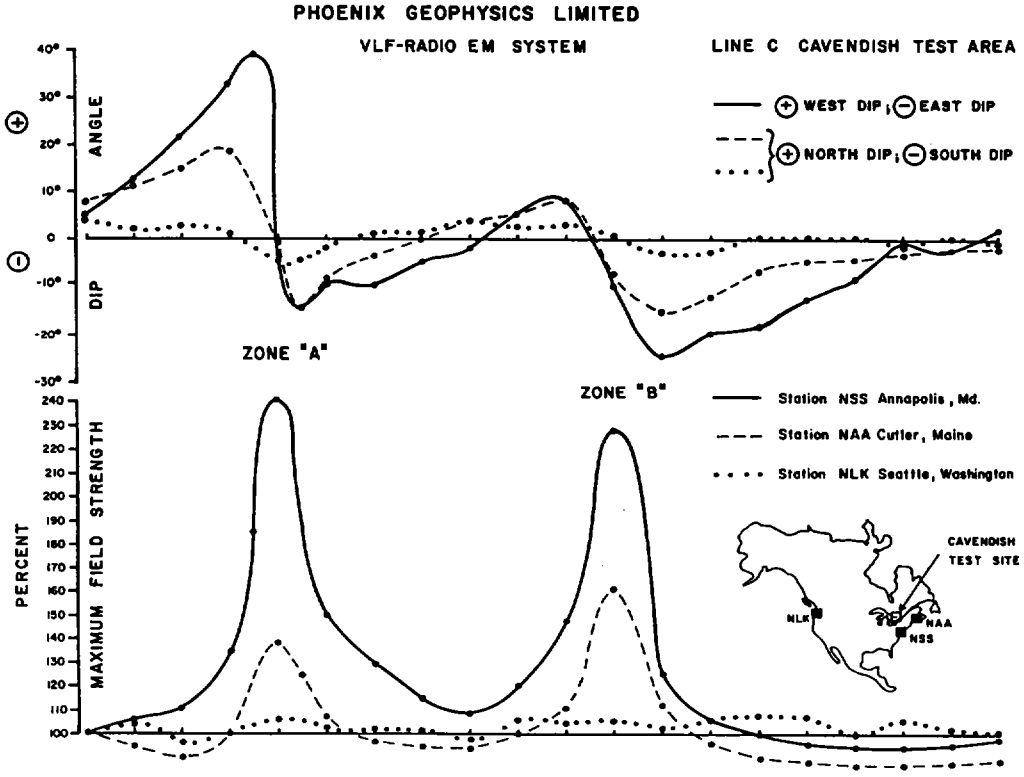
All of the established stations may be selected, or alternatively, a local VLF transmitter may be used which transmits at any frequency in the range 14.0 to 29.9 kHz.

VLF Station	Frequency (kHz)
Bordeaux, France	15.1
Odessa (Black Sea)	15.6
Rugby, U.K.	16.0
Moscow, U.S.S.R.	17.1
Yosamai, Japan	17.4
Hegaland, Norway	17.6
Cutler, Maine	17.8
Seattle, Washington	18.6
Malabar, Java	19.0
Oxford, U.K.	19.6
Paris, France	20.7
Annapolis, Maryland	21.4
Northwest Cape, Australia	22.3
Laulualei, Hawaii	23.4
Buenos Aires, Argentina	23.6
Rome, Italy	27.2

Field Data

The results below illustrate the need for using two orthogonal stations when the strike of the prospective conductor is not well-known. The dip angle and amplitude data measured using station NLK in Seattle, Washington, show only a very weak anomaly associated with the two conductive sulphide zones at Cavendish, Ontario.

The results obtained using Cutler, Maine reveal a more prominent anomaly, but the best response was obtained using Annapolis, Maryland since the station lies almost due south and the transmitted electromagnetic field is thus maximum-coupled with the North-South trending conductors.



McPHAR

TV-1A Radiation Spectrometer

A 3-channel instrument for reconnaisance use

Both meter and audio reading

Four count scales

Trigger on-off switch

Functional pistol design

Lightweight

Model TV-1A is a three channel, integral type radiation spectrometer. Measurements are based on the spectral characteristics of gamma radiation from radioactive elements. Selection of the operating threshold is made by means of the threshold selector switch.

The instrument is designed primarily for reconnaissance. The total count position provides for maximum sensitivity. Additional thresholds however, provide the capability to differentiate between gamma radiations emanating from daughter elements of uranium and thorium and provide quantitative information relating to each.

The meter is calibrated to display zero to 100 counts per minute. A four position scale multiplier switch provides four full scale ranges of 100, 1,000, 10,000 and 100,000 counts per minute. A fifth position on this switch is employed to test the condition of the batteries.

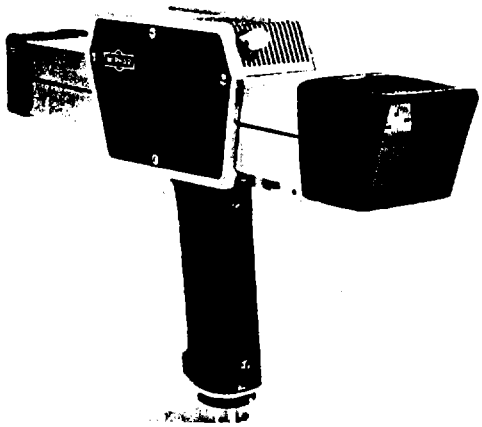
The variable time constants are tied in with the threshold selector switch. In the total count (maximum sensitivity) position, a fast or slow time constant may be selected. In the upper thresholds (lower net count), the long time constant only, is in effect.

The detecting element is a 1½ by 1½ inch sodium iodide crystal coupled to a photomultiplier tube. These are hermet-

Field use is convenient with leather holster

ically sealed, magnetically shielded and mounted in the forward end of the scintillometer housing.
A speaker provides a variable pitch output with changing radiation levels. A speaker control, mounted on the top of the instrument, can be used to adjust the pitch for any given level of radiation.

TV-1A spectrometer comes complete with a leather holster, thorium calibrating source and a foam fitted attache case.



Specifications

Measurement Ranges: Four switch positions provide full scale counts per minute of 100, 1,000, 10,000 and 100,000.

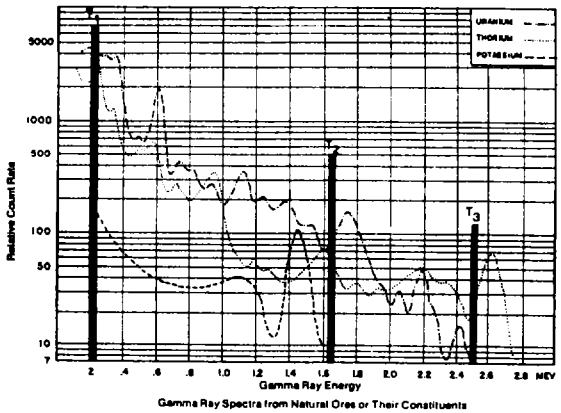
Time Constant: Threshold T_1: 1 and 10 seconds. Thresholds T_2 and T_3: 10 seconds.

Speaker: Variable pitch output governed by radiation intensity.

Temperature Range: −35 degrees to +55 degrees C.

Detector Crystal: NaI (T) 1½" x 1½" (43 cu. cm.) and matched photomultiplier hermetically sealed.

Battery Supply: Two "C" size flashlight cells located in handle. On-off control by either trigger or slide switch.



Gamma Ray Spectra from Natural Ores or Their Constituents

Voltage Regulation: Internally generated high and low voltages are highly regulated down to ½ initial battery voltage.

Accessories: Leather belt holster, thorium calibrating source, spare batteries, instruction manual, foam fitted attache case.

Weight: 3 pounds.

McPhar Instrument Corporation

Head Office:

55 Tempo Avenue
Willowdale, Ontario, Canada M2H 2R9
Tel: (416) 497-1700 Telex: 0623541
Cable: McPHAR TOR

Sales agents in:

Africa, Asia, Australia, Europe,
North & South America

Contact McPhar Instrument Corp. head office for the agent in your area.

00 BASELINE

GUIBORD TWP

COOK TWP

4 S

8 S

12 S

16 S

20 S

24 S

28 S

32 S

36 S

40 S

44 S

48 S

52 S

52+80 BASELINE

CON VI

CON V

LOT 12

LOT 11

LOT 10

LOT 9

LOT 8

LOT 8 / LOT 7

799711 799712 799713 799714 799715 799716 799717 799718 799719 799720 799721 799722 799723 799724 799725 799726 799727 799728 799729 799730 799731 799732 799733 799734 799735 799736 799737 799738 799739 799740

858982 858983 858980 858981

884194 884191 884193 884192 884189 884190

PIKE RIVER

P

200

INSTRUMENT : SHARPE MF I FLUXGATE MAGNETOMETER

Contour Interval : 100 gammas

#63.4997

OM86-6-P-59

WILZEL RESOURCES LIMITED

BENNETT-COOK PROPERTY

MAGNETOMETER SURVEY

COOK TWP - LARDER LAKE M D

Scale: 1 inch = 400 feet

OCT 1985 AUG 1986
JUNE 1986

MAP NO. BC-2

42A08NE0248 63 4997 COOK

00 BASELINE

52+80 BASELINE

GUIBORD TWP

COOK TWP

799712 799711 799719 799721 799723 799724 799731 858982

799713 799714 799720 799722 799726 799725 799733 858983

799716 799715 799727 799728 799736 858980

799717 799718 799730 799729 799737 858981

799740 799739

884194 884191 884189 884190

884193 884192

A A1 B C D E F G H I

LOT 12 / LOT 11 — LOT 11 / LOT 10 — LOT 10 / LOT 9 — LOT 9 / LOT 8 — LOT 8 / LOT 7

2 E 6 E 10 E 14 E 18 E 22 E 26 E 32 E 36 E 40 E 44 E 48 E 52 E 58 E 62 E 66 E 70 E 74 E 78 E 82 E 86 E 90 E 94 E 98 E 102 E

8 E 12 E 16 E 20 E 24 E 28 E

4 S 8 S 12 S 16 S 20 S 24 S 28 S 32 S 36 S 40 S 44 S 48 S 52 S

CON VI / CON V

PIKE RIVER

STATION

Pheonix VLF-2 EM Unit

Cutler, Maine (24 0 KHz)

DIP ANGLE SCALE 1 inch = 40 degrees

■ Base Station

● Cross-over Anomaly, High Field Strength

○ " " " Low " "

R A BENNETT

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

#63.4997

OM86-6-P-59

WILZEL RESOURCES LIMITED

BENNETT - COOK PROPERTY

VLF - EM SURVEY

COOK TWP - LARDER LAKE M D

Scale 1 inch= 400 feet

JUNE 1986 AUG 1986 MAP NO BC-3

42A08NE8048 63 4997 COOK

210

00 BASELINE

52+80 BASELINE

GUIBORD TWP

COOK TWP

4 S

8 S

12 S

16 S

20 S

24 S

28 S

32 S

36 S

40 S

44 S

48 S

52 S

CON VI

CON V

799712 799711 799719 799721 799723 799724 799731 858982

799713 799714 799720 799722 799726 799725 799733 858983

799716 799715 799727 799728 799736 858980

799717 799718 799730 799729 799737 858981

884194 884191 799740 799739 884189 884190

884193 884192

LOT 12 LOT 11 LOT 10 LOT 9 LOT 8 LOT 7 LOT 6

PIKE RIVER

INSTRUMENT Pheonix VLF-2 EM Unit

STATION Annapolis, Maryland (21 4 KHz)

DIP ANGLE SCALE 1 inch = 40 degrees

● Cross - over Anomaly, High Field Strength

○ " " " Low " "

■ Base Station

#63.4997

OM86-6-P-59

R A BENNETT

PROVINCE OF ONTARIO

WILZEL RESOURCES LIMITED

BENNETT - COOK PROPERTY

VLF - EM SURVEY

COOK TWP - LARDER LAKE M D

Scale 1 inch= 400 feet

JUNE 1986 AUG 1986 MAP NO BC-4

42A08NE9248 63 4997 COOK

220

00 BASELINE

52+80 BASELINE

GUIBORD TWP

COOK TWP

CON VI

CON V

799712 799711 799719 799721 799723 799724 799731

799713 799714 799720 799722 799726 799725 799733

799716 799715 799727 799728 799736

799717 799718 799730 799729 799737

799740 799739

884194 884191 884189 884190

884193 884192

858982 858983 858980 858981

LOT 12 LOT 11 LOT 10 LOT 9 LOT 8

LOT 11 LOT 10 LOT 9 LOT 8 LOT 7

Open Spruce · Spruce · Poplar · Poplar & Spruce · Spruce & Poplar · Alder · Cedar · Cedar Swamp · Wet Spruce · Outcrop · Beaver Pond · Pond · Beaver Dam · Road Allowance · PIKE RIVER

NORTHERN LIMIT OF LAVA MOUNTAIN

LEGEND

- Drainage
- Swamps
- Vegetation
- Outcrops

INSTRUMENT Mc PHAR TV-1A RADIATION SPECTROMETER

READINGS Total counts per minute

■ Base Station

#63.4997
OM86-6-P-59

WILZEL RESOURCES LIMITED

BENNETT - COOK PROPERTY

RADIOMETRIC SURVEY

COOK TWP - LARDER LAKE M D

Scale 1 inch = 400 feet

AUG 1986

MAP NO BC-5

R A BENNETT

42A08NE0248 63 4997 COOK

00 BASELINE

GUIBORD TWP

COOK TWP

4 S

8 S

12 S

16 S

20 S

24 S

28 S

32 S

36 S

40 S

44 S

48 S

52 S

CON VI

CON V

52+80 BASELINE

LOT 12 LOT 11

LOT 11 LOT 10

LOT 10 LOT 9

LOT 9 LOT 8

LOT 8 LOT 7

2 E 6 E 10 E 14 E 18 E 22 E 26 E 32 E 36 E 40 E 44 E 48 E 52 E 58 E 62 E 66 E 82 E 86 E 90 E 94 E 98 E 102 E

8 E 12 E 16 E 20 E 24 E 28 E

799712 799711 799719 799721 799723 799724 799731 858982

799713 799714 799720 799722 799726 799725 799733 858983

799716 799715 799727 799728 799736 858980

799717 799718 799730 799729 799737 858981

884194 884191 799740 799739 884189 884190

884193 884192

LARGE MAGNETIC LOW AREA

POSS MINE FAULT

LARGE MAGNETIC LOW AREA

Open Spruce

Spruce

Sp uce

Wet Sp uce

Poplar

alder

Cedar

Cedar Swamp

Spruce & Poplar

Poplar & Spruce

Pond

Beaver Pond

Old Beaver Pond

Creek

PIKE RIVER

Walking Road

F31472

F31473

F31481

F31471

Area of Stripping

Northern Limit of Lava Mountain

LEGEND

PHANEROZOIC

PRECAMBRIAN

4 [4] PLEISTOCENE - clay, swamp

- ARCHEAN

MATACHEWAN - diabase dykes

KENOJEVIS GROUP THOLEIITES

3 [3] Dacitic Crystal Tuff, (Porphyry ?)

2 [2] High Iron Basaltic Lava

1 [1] Low Iron (Mg-rich) Basaltic Lava

- Ia Variolitic Lava

SYMBOLS

- Outcrop Areas
- Pit, Trench
- Quartz Veins
- Geological Contact, inferred
- Fault, Shear zones
- Jointing
- Flow Top Breccias
- Pillow lavas showing Tops
- Sample Location - Rock Suite
- Swamp Area
- Swamp Boundary
- Vegetation Boundary
- Claim Post & Line
- Drainage
- Bush machine Road

R A BENNETT

PROFESSIONAL ENGINEER

PROVINCE OF ONTARIO

#63.4997

OM86-6-P-59

WILZEL RESOURCES LIMITED

BENNETT - COOK PROPERTY

GEOLOGY

COOK TWP - LARDER LAKE M D

Scale 1 inch = 400 feet

AUG 1986

MAP NO BC-1

42A8ONE8248 83 4097 COOK

240