# GM 41848

REPORT ON A VLF-EM SURVEY, SABOURIN CREEK & ANNAMAQUE/FARADAY PROPERTIES

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BROMINCO INC.

# REPORT ON A VLF-EM SURVEY
# SABOURIN CREEK & ANNAMAQUE/FARADAY PROPERTIES
# BOURLAMAQUE & LOUVICOURT TOWNSHIPS, QUEBEC
# (PN 403, 404, 406)
# N.T.S. 32C-4





NOVEMBER 21, 1984

H. R. STOCKFORD, P. Eng.

## SUMMARY

Brominco Inc. conducted a 124.94 mile VLF survey over the Sabourin Creek and parts of the Annamaque/Faraday properties during the period March-June 1984 in order to identify anomalies which may be caused by gold-bearing rock units and/or structures along and adjacent to the Cadillac Break, and gold/base metal deposits in the volcanic rocks to the north of the Break.

Numerous conductors were located, many of which correlate with known bedrock faulting and/or mineralization. Systematic follow-up work is warranted. A budget of $968,000 will be required to carry out the recommended work program which includes geophysics, geology, overburden drilling and diamond drilling.

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Compilation Map 1. VLF Fraser Filter Contour (Seattle/Hawaii), 1" = 1000'

| 1"=400' Map No. | Dip Angle Profiles Seattle (Hawaii) | Fraser Filter Seattle (Hawaii) | Field Strength Seattle (Hawaii) | Dip Angle & Field Strength (Annapolis) |
|---|---|---|---|---|
| 300/3.1.3 | x | x | x | x |
| 300/3.1.4 | x | x | x | x |
| 300/3.3.1 | x | x | x | x |
| 300/3.3.2 | x | x | x | x |
| 400/2.3.4 | x | x | x | x |
| 400/4.1.2 | x | x | x | x |
| 400/4.1.4 | x | x | x | x |
| 400/4.2.1 | x | x | x | |
| 400/4.2.3 | x | x | x | x |
| 400/4.2.4 | x | x | x | x |

## 1.0 INTRODUCTION

Brominco Inc. conducted a VLF-electromagnetic survey over the Sabourin Creek and parts of the Annamaque/Faraday properties during the period March 1 - June 30, 1984. The purpose of the survey was to define potentially gold-bearing bedrock conductors along and adjacent to an east-west structure known as the Cadillac Break which is thought to pass through the Sabourin Creek property.

A total of 124.94 miles of VLF surveying was completed, including 87.46 miles using a single transmitting station and 37.48 miles using two stations (Seattle, Washington, operating at 24.8 kHz and Annapolis, Maryland, at 21.4 kHz).

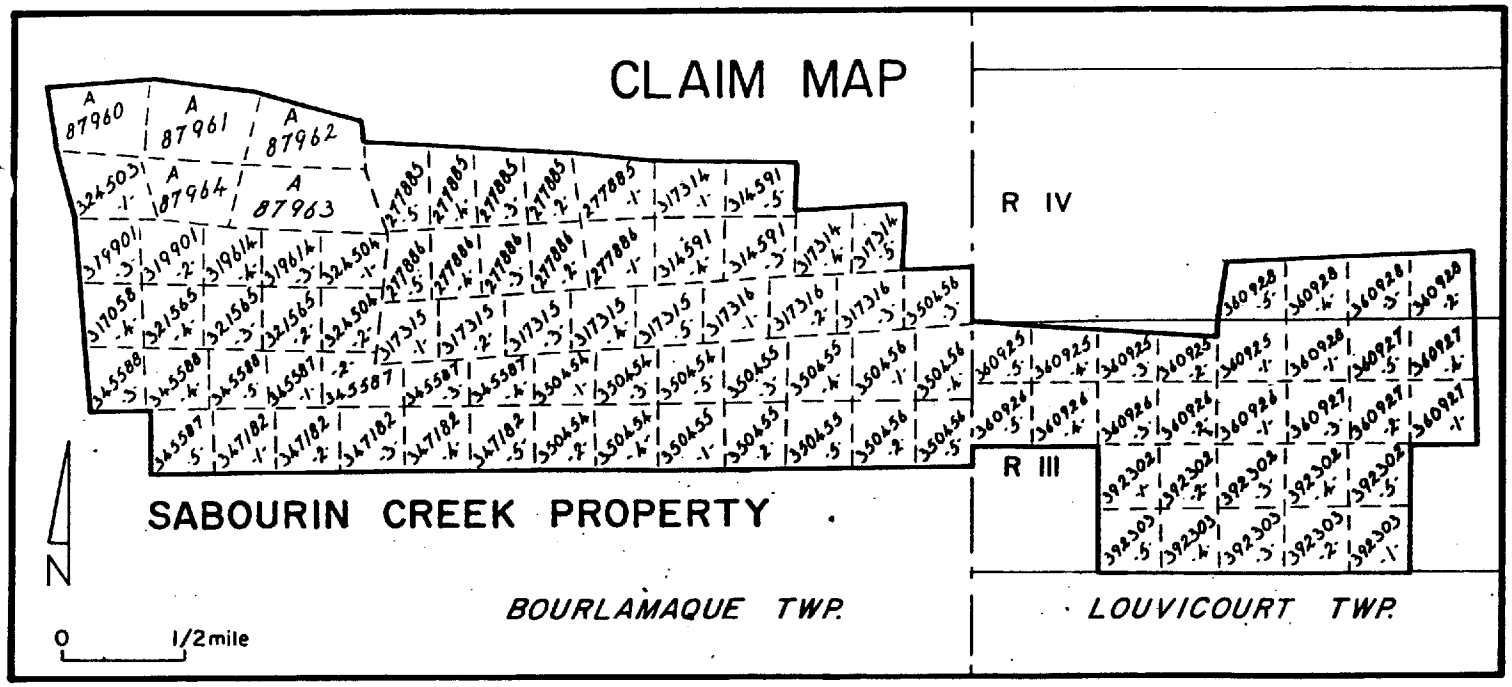
The instrument used for the survey was a Phoenix VLF-2 (see Appendix II for specifications). The work was carried out by P. Morissette of Rouyn, Quebec, operating under contract to Brominco Inc. The results of the survey are presented on maps included at the back of this report. Numerous anomalies were identified which require follow-up evaluation and these have been analysed using the Fraser Filter method (see Compilation Map 1).

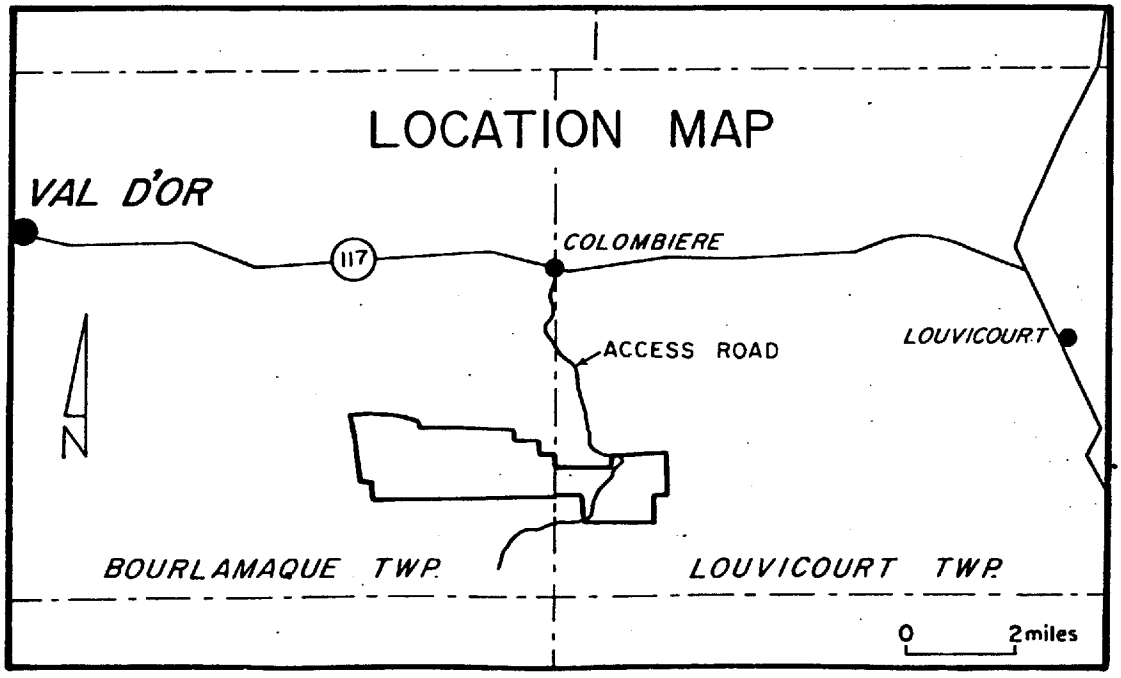
## 2.0 LOCATION AND ACCESS

The properties are located in Bourlamaque and Louvicourt Townships, Quebec, and are centred 10 miles ESE of the City of Val d'Or (Figure 1). Access to the properties is provided by Provincial Highway #117 east from Val d'Or to Columbiere and then south to the eastern part of the claims by gravel road. Numerous winter roads provide snowmobile or all-terrain vehicle access within the claim groups.

## 3.0 LAND POSITION

The Sabourin Creek property consists of 98 contiguous mining claims held by Brominco Inc. All of these claims were covered by the VLF survey. The Annamaque property consists of 60 contiguous mining claims held by Brominco Inc., and 10 of these claims were covered by the VLF survey. The Faraday property consists of 12 contiguous mining claims held under



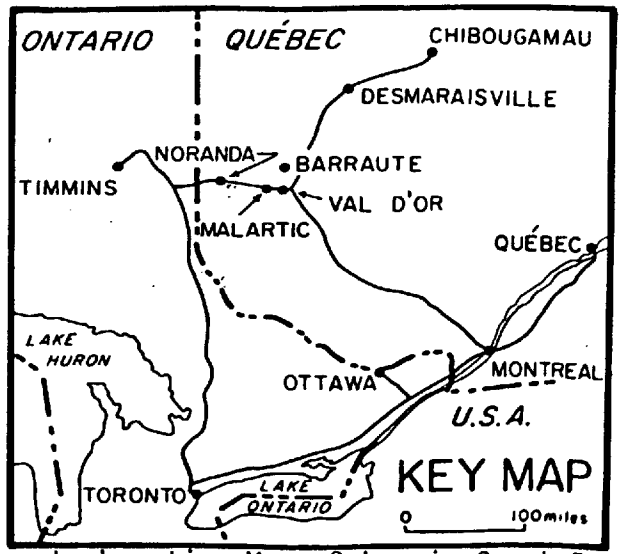
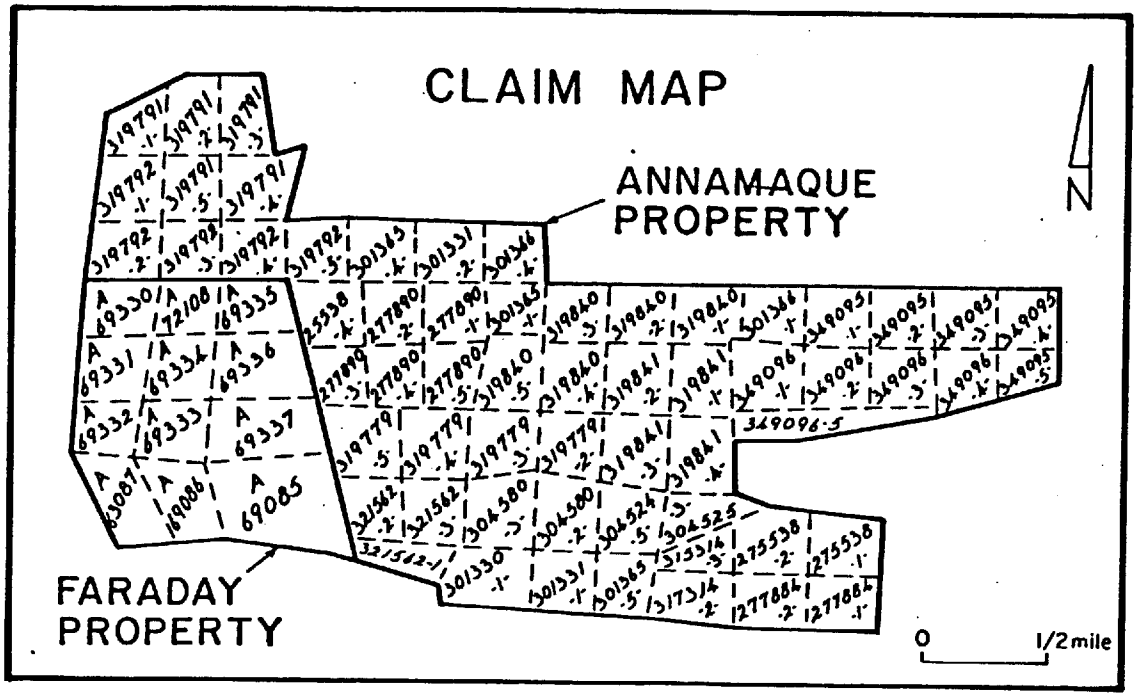
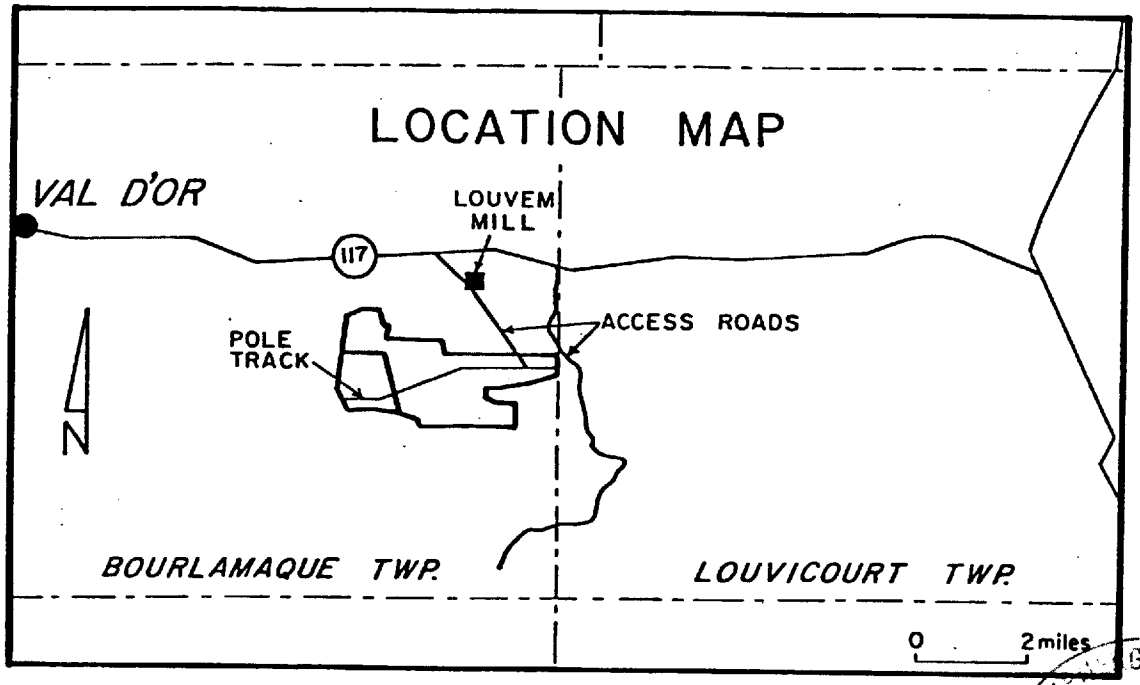






Figure 1. Property Location Map, Sabourin Creek Property



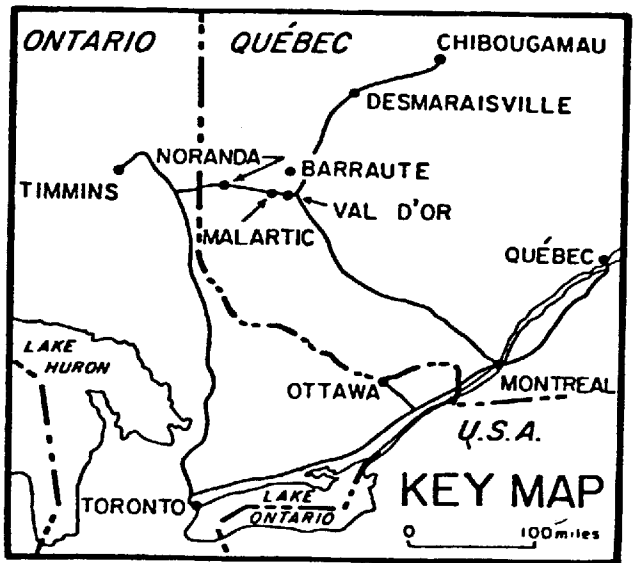
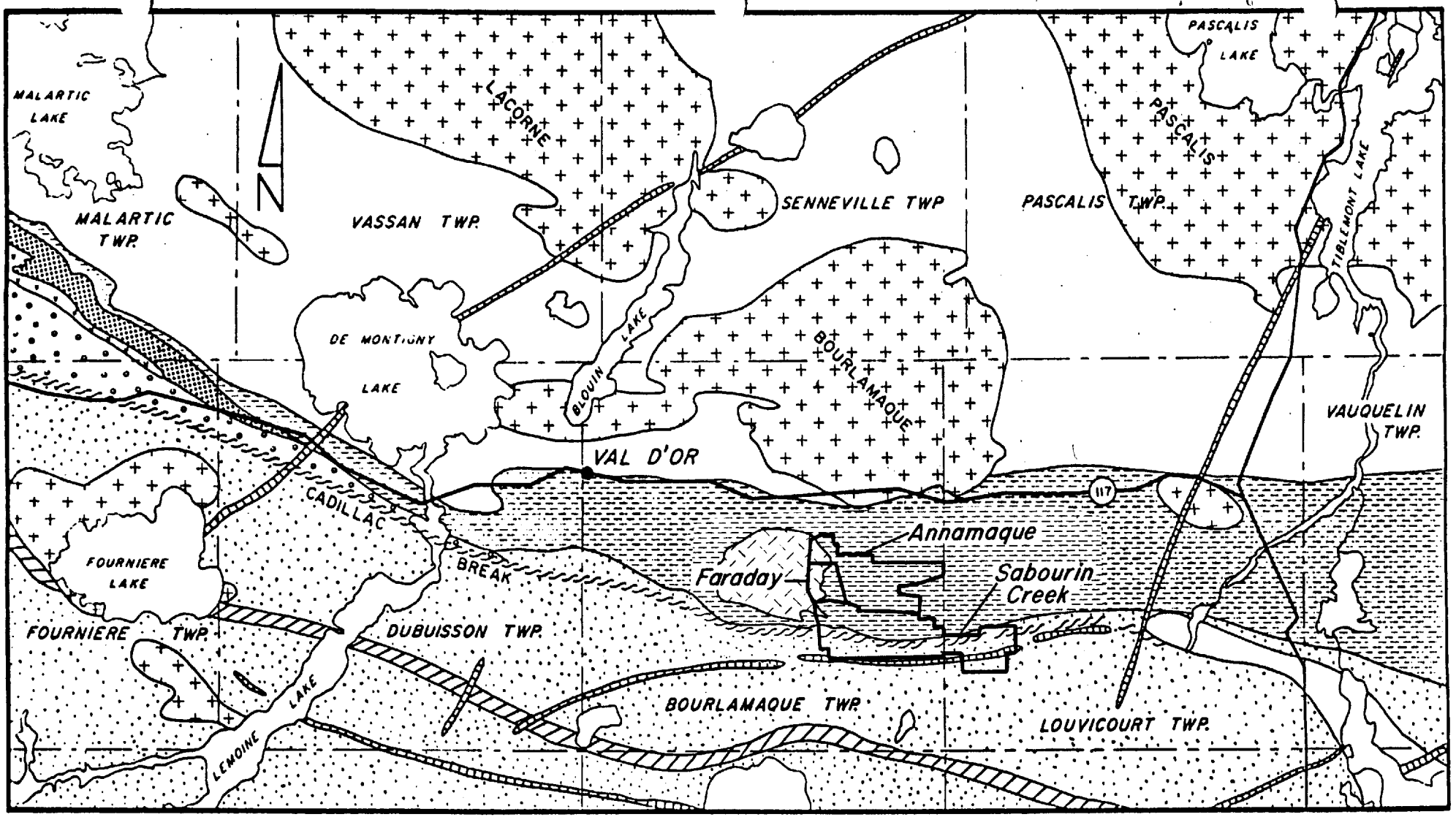






Figure 2. Property Location Map, Annamaque-Faraday Properties




LEGEND

- DIABASE DYKE (PROTEROZOIC)
- GRANITE BATHOLITH
- DIORITE, CENTRE POST INTRUSION
- CADILLAC GROUP
- PONTIAC GROUP (SEDIMEMTS)
- PONTIAC GROUP (ULTRAMAFIC LAVA)
- BLAKE RIVER GROUP
- KEWAGAMA GROUP
- UPPER MALARTIC GROUP
- LOWER MALARTIC GROUP



0 5 10 15km

SCALE = 1:250,000

Figure 3. Plan Showing General Geology, Val d'Or Area

option by Brominco Inc. from Faraday Resources Inc., and 4 of these claims were covered by the survey. A detailed list of claims is provided in Appendix I.

## 4.0 GEOLOGY

The main geological formations on the properties are Archean in age and lie within the Superior Structural Province of the Canadian Shield.

The northern two-thirds of the properties are underlain by a generally east-west striking, steeply-dipping, south-facing sequence of felsic to intermediate pyroclastic rocks and intercalated mafic flows, all of volcanic origin. These have been intruded by a variety of dioritic to gabbroic dikes and sills of probable subvolcanic origin, and by quartz feldspar porphyry dikes and sills. A number of sulphide and gold occurrences have also been documented in this area.

The southern third of the claim groups is underlain by east-west striking and steeply-dipping clastic metasediments of the Pontiac Group.

The dominant structural feature in the area is the Cadillac Break which traverses the Sabourin Creek property in an east-west direction. There is evidence for several cross-structures in the area, principally in a N-S and NE-SW direction, and some of these have been detected by the field strength component of the VLF survey, supported by magnetometer survey data. The area has undergone at least two phases of deformation.

## 5.0 PREVIOUS WORK

Numerous geophysical surveys have been carried out over the Sabourin Creek and Annamaque properties since the late 1930's. Most of this work was done in a piecemeal fashion due to the complex division of property ownership. This work included various geological, magnetic, electromagnetic and induced polarization surveys as well as diamond drilling and overburden drilling.

A complete listing of previous work on record in Brominco's files is given under the Reference section at the back of this report (see pages 8 to 22).

## 6.0 1984 VLF-EM SURVEY

### 6.1 Survey Method

A total of 124.94 miles of VLF surveying was completed by P. Morissette of Rouyn, Quebec, using a Phoenix VLF-2 instrument. Of this total, 87.46 miles were surveyed using one transmitting station, and 37.48 miles using two stations.

The main part of the survey was carried on N-S lines spaced at 400 foot intervals with readings of dip angle and field strength taken every 50 feet; the instrument faced north. The Seattle, Washington station, operating at a frequency of 24.8 kHz, was used for most of the survey but a small portion of the SE part of the grid was surveyed using Laulualei, Hawaii (23.4 kHz), when Seattle was not operating. The field strength readings were corrected for diurnal variations using stations along the baseline.

Some of the N-S lines and several E-W lines were surveyed using the Annapolis, Maryland transmitting station (21.4 kHz), with the instrument facing east, to provide additional information on structures oriented obliquely to the regional strike, or N-S.

### 6.2 Results of the Survey

A large number of VLF anomalies were detected during the course of the survey. These anomalies have been divided into 13 anomaly groups labelled A-M on Compilation Map 1 which is a contoured Fraser Filter plan at a scale of 1" = 1000'. The main features of these anomaly groups and interpreted anomaly sources are summarized in the following table:

| Anomaly Group | Fraser Filtered Dip Angle Peak (°) | Magnetic Response | Field Strength Peak (%) | Interpreted Cause of Anomaly |
|---|---|---|---|---|
| A | +37 @ L6W,3N +36 @ L104W,3S | Low | 190 @ L104W,3S | Cadillac Break (Fault ± sulphides?) |
| B | +46 @ L96W,10S | Low | 190 @ L96W,10S | Graphitic argillite ± minor sulphides |
| C | +32 @ L72W,21S | Generally flat | 210 @ L100W,22S | Complex fault structures ± minor sulphides in Pontiac sediments. Some overburden anomalies? |
| D | +23 @ L60W,5N | High mag. correlation | 170 @ L6W,13N | Magnetite &/or sulphides (Akasaba type) |
| E | +76 @ L144W,23N | High mag. correlation | 250 @ L132W,15N | Sulphides ± magnetite Complexly folded |
| F | +28 @ L156W,30N | Flanking high mag. anomalies | 150 @ L140W,33N | Faults ± sulphides Some cross-structures? |
| G | +26 @ L132W,43N | High mag. correlation (1 line only) | 130 @ L132W,44N | Cross-fault ± sulphides? or overburden conductor |
| H | +13 @ L140W,60N | Low/& Low within high | 120 @ L140W,61N | Cross-fault? ± sulphides &/or overburden effect |
| I | +22 @ L144W,76N | +ve mag. correlation | 160 @ L160W,73N | Magnetic sulphides |
| J | +25 @ L140W,96N | Moderate +ve & Low | 170 @ L140W,97N | Sulphides &/or fault |
| K | +20 @ L140W,105N | Moderate +ve correlation | 140 @ L148W,105N | Magnetic sulphides |
| L | +13 @ L164W,108N | High mag. correlation | 135 @ L156W,109N | Magnetic sulphides |
| M | +20 @ L144W,118N | Low | 180 @ L140W,115N | Fault, possibly with minor sulphides |

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusions

The VLF survey has successfully identified the Cadillac Break structure as a comparatively weak conductor (Conductor A, Map 1) which extends across the eastern two-thirds of the property. Oblique cross-structures and possibly deep overburden have caused only intermittent conductors to appear along the western extension of the Break. The presence of the Cadillac Break has been confirmed in bedrock exposures in the central part of the property.

Conductor B correlates with a graphitic argillite band intersected in several drill holes. This conductor also exhibits poor continuity in the western third of the property but is essentially continuous to the east.

Multiple conductors grouped as Conductor C (Map 1) may be caused by subsidiary faulting associated with the Cadillac Break, but there are no known drill holes in this area.

Anomaly groups D and E correlate well with known magnetic sulphides exposed at surface and in drill holes, with the E group exhibiting the highest conductivities in the map area.

The survey detected many conductors, a large number of which are confirmed by known faults or sulphide zones within bedrock. The field strength survey suggests the possible presence of important cross-structures which may have influenced the concentration of gold and/or base metal mineralization.

### 7.2 Recommendations

It is recommended that the VLF survey data be used in conjunction with geological and geochemical information, magnetometer survey data, etc. to lay out specific follow-up work, which should include:

a) Systematic overburden drilling and analysis of the basal till for gold, arsenic, copper and zinc.

b) Induced polarization surveys to cover Conductor A across the property.

c) A Pulse EM survey of the area east of the Centre Post Intrusion to cover Conductors H through M, where known base metal, "stringer-type" mineralization is known to occur in several locations.

d) Diamond drilling of targets selected after completion of a), b) and c) above.

The estimated cost to carry out these recommendations is $968,000, broken down as follows:

| | |
|---|---|
| Geology | $70,000 |
| Pulse EM survey (17 miles) | $25,000 |
| Induced polarization surveys (40 miles) | $75,000 |
| Overburden drilling (12,000 feet) | $395,000 |
| Diamond drilling (15,000 feet minimum) | $315,000 |
| Management | $88,000 |
| TOTAL | $968,000 |

REGISTERED PROFESSIONAL ENGINEER
H. R. STOCKFORD
PROVINCE OF ONTARIO

Howard R. Stockford

# REFERENCES

## SABOURIN CREEK 403

### 403-4 GEOLOGY


403-4-1 Compilation Map, Geology & Magnetic Survey
Macbart Property (North Group)
Transcan Investors Ltd., 1945

403-4-2 Geological Maps of "Sabourin Zone" with Drill Hole
Locations, Sabourin Creek Mines Ltd.
Fockler, 1950

403-4-3 Report on the Property of Sabourin Creek Mines Ltd.
Burrill, 1957

403-4-4 Geological Map, Sabourin Creek Mines Property
1" = 1000', (1957?)

403-4-5 Report on Field Search for Drill Hole Locations
Jolin Bourlamaque Mines Ltd. Property
Pioneer Consultants Ltd.
Cunningham-Dunlop, 1961

403-4-6 Report on the Properties of Louvex Mines Inc.
Louvicourt & Bourlamaque Townships
Pudifin, 1968

403-4-7 Memo on Properties of Louvex Mines Inc.
Louvicourt & Bourlamaque Townships
Woolham, 1969

403-4-8 Geological Study on Electrical Conductors on
Jolin Bourlamaque Option, Ducros Mines Ltd.
Bérubé, 1970

403-4-9 Report of Exploration on Properties of Jolin
Bourlamaque and Jos Sweet, Ducros Mines Ltd.
Bérubé, 1970

403-4-10 Report on Properties of N.N.T. and
Jolin Bourlamaque Mines Ltd.
Bérubé, 1971

403-4-11 Geological Compilation, S.E. Quarter
of Bourlamaque Township (North Part)
Bérubé, 1971

403-4-12 Report on the Properties of Brossard
Mining Group in Bourlamaque Township
Bérubé, 1971

403-4-13 Compilation of Mag., EM & I.P.
S.E. Bourlamaque Township
M.N.R.Q., Germain, 1973

403-4-14 DDH Plan, S.E. Bourlamaque Township
M.N.R.Q., Germain, 1973

403-4-15 Preliminary Report and Progress Reports on
General Compilation of N.N.T. Properties
Descarreaux, 1974-76

403-4-16 Geological Report, N.N.T. Property
Mongeau, 1975

403-4-17 Report on the "Sabourin Zone" on N.N.T. Property
Bérubé, 1975

403-4-18 Report on Properties of N.N.T., North Shore
Uranium, Ducros Mines, First Orenada & Valdex
Bérubé, 1976

403-4-19 Study and Recommendations on the "Bourlamaque
Project" for Brossard Mining Group
Gaucher, 1976

403-4-20 Report of Work Done on N.N.T. Property
Mongeau, 1976

403-4-21 Compilation Map, Sabourin Creek (Louvicourt only)
Brominco, 1982

403-5 GEOPHYSICS

403-5-1 **Magnetic**

403-5-1-1 Magnetic Survey, Property of Inspiration
Mining & Development Co. Ltd. (Jolin
Bourlamaque), Reports & Maps
Koulomzine, Geoffroy & Brossard, 1946

403-5-1-2 Magnetic Survey, Part of Jolin Bourlamaque
Jos Sweet Property, Maps
Ducros Mines Ltd., 1970

403-5-1-3 Magnetic & VHEM Survey, N.N.T. Property
Report & Maps
Bérubé, 1970

403-5-1-4 Magnetic, VHEM & VLF-EM Fill-in Surveys
N.N.T. Property, Reports & Maps
Bérubé, 1971

403-5-1-5 Compilation of Mag., EM & I.P.
S.E. Bourlamaque, M.N.R.Q.
Germain, 1973

403-5-1-6 Index Plan of Magnetic Surveys
All Bourlamaque Properties
Beaulieu, 1976

403-5-1-7 Magnetic Survey, N.N.T. Property
Bérubé, 1976

403-5-1-8 Magnetic & VLF-EM Survey, Akasaba
Mine Property (Bourlamaque only)
Bérubé (?), 1976

403-5-1-9 Magnetic Survey, Sabourin Creek Property
(Louvicourt only)
Mongeau, 1976

403-5-1-10 Index Map of Magnetic Surveys
All Bourlamaque Properties
Beaulieu, 1977

403-5-1-11 Index Map of Magnetic Surveys
All Bourlamaque Properties
Brominco, 1982

403-5-2 **Electromagnetic**

403-5-2-1 HEM Survey, Part of Pierce Property
(Central Sabourin Creek)
Prospecting Geophysics Ltd., 1964

403-5-2-2 Airborne EM Survey over Parts of
S.E. Bourlamaque (N.N.T.) for
Brossard Mining Group
Geoterrex Ltd., 1968

403-5-2-3 HEM Survey, Jolin Bourlamaque & Jos
Sweet Properties, Ducros Mines Ltd.
Bérubé, 1970

403-5-2-4 Magnetic & VHEM Survey, N.N.T. Property
Bérubé, 1970

403-5-2-5 Airborne EM Survey over Parts of
S.E. Bourlamaque (Jolin Bourlamaque
& Jos Sweet) for Brossard Mining Group
Geoterrex Ltd., 1970

403-5-2-6 Magnetic & VHEM Survey, N.N.T. Property
Bérubé, 1970

403-5-2-7 Magnetic, VHEM & VLF-EM Fill-in Surveys
N.N.T. Property
Bérubé, 1971

403-5-2-8 VLF-EM Detail Survey, Parts of
Jolin Bourlamaque Property
Bérubé, 1971

403-5-2-9 EM-Turam Survey, N.N.T. Property
Questor, 1972

403-5-2-10 Compilation of Mag., EM & I.P.
S.E. Bourlamaque, M.N.R.Q.
Germain, 1973

403-5-2-11 HEM Survey, N.N.T. Property
Bérubé, 1975

403-5-2-12 VLF-EM Survey, N.N.T. Property
Bérubé, 1975

403-5-2-13 HEM Detail Survey, N.N.T. Property
Valiquette, 1976

403-5-2-14 VLF-EM Survey, N.N.T. Property
Bérubé, 1976

403-5-2-15 VLF-EM & Magnetic Survey
Akasaba Property (Bourlamaque only)
Bérubé (?), 1976

403-5-2-16 Compilation of VLF-EM Anomalies
Sabourin Creek Property, 1" = 1000'
1976

403-5-2-17 HEM Survey, Sabourin Creek
Property (Louvicourt only)
Mongeau, 1976

403-5-2-18 VLF-EM Survey, Sabourin Creek
Property (Louvicourt only)
Mongeau, 1976

403-5-2-19 Airborne EM Survey, Val d'Or and
Barraute Areas for Brominco Inc.
Aerodat Ltd., 1977

403-5-2-20 Report on Geophysical Surveys on Claim
360925, Louvicourt Township, Brominco
Carrière, 1978

403-5-2-21 VLF-EM (Annapolis) Survey, Sabourin Creek Property (Louvicourt only) Brominco, 1982

403-5-2-22 Index Map of EM Surveys All Bourlamaque Properties Brominco, 1982

403-5-3 **Induced Polarization**

403-5-3-1 I.P. & Resistivity Survey on Sabourin Creek Property for Frobex Ltd. McPhar, 1964

403-5-3-2 I.P. & Resistivity Survey on Part of Bourlamaque Twp. for Brossard Mining Group McPhar, 1972

403-5-3-3 Compilation of Mag., EM & I.P. S.E. Bourlamaque Township, M.N.R.Q. Germain, 1973

403-5-3-4 Index Map of I.P. Surveys All Bourlamaque Properties, M.N.R.Q. Brominco, 1982

403-7 **DRILLING**

403-7-1 **Diamond Core**

403-7-1-1 DDH 1, 2, 3, 4 & 7, Logs, Goldora Mines Maufette, 1944

403-7-1-2 DDH 1, 2, 3, 4 & 7, Sections Goldora Mines, 1944

403-7-1-3 DDH 1 to 8, Logs Jolin Bourlamaque Mines Ltd. Inspiration, 1945(?)

403-7-1-4 DDH 3, 6, 7 & 8, Sections, 1" = 100' Jolin Bourlamaque Mines Ltd. 1946

403-7-1-5 DDH MB-1, Relog of 1945(?) Hole on Macbart Property Bérubé, 1970

403-7-1-6 DDH MB-10, Assays of Two Samples Bourlamaque Assay Office, 1965

403-7-1-7 DDH 51-A & 54-A, Sample Record Sheets, Orenada Mines Ltd. 1946

403-7-1-8 DDH 51-A & 54-A, Sections, 1" = 30' Orenada Gold Mines Ltd. 1946(?)

403-7-1-9 DDH M-1 to M-21, Logs Sabourin Creek Mines Ltd. Fockler, 1950

403-7-1-10 DDH M Series, Various Sections, 1" = 100' 1950(?) to 1894

403-7-1-11 DDH M Series, Location Plan with Geological Interpretation, Sabourin Creek Mines Ltd. Fockler (revised), 1950

403-7-1-12 DDH B-1 & B-2, Logs & Location Plan on Frobex Property (Central Sabourin Creek) Dome, 1964

403-7-1-13 DDH J-71-1 to J-71-5, Logs Jolin Bourlamaque Mines Ltd. Bérubé, 1971

403-7-1-14 DDH J-71 Series, Sections, 1" = 50' Jolin Bourlamaque Mines Ltd. Bérubé, 1971

403-7-1-15 DDH J-71 Series, Miscellaneous Assays 1971

403-7-1-16 DDH NNT-2, Log, N.N.T. Mining Co. Ltd. Bérubé, 1973

403-7-1-17 DDH NNT-2, Section 1973, 1974

403-7-1-18 DDH BB-77-1, Log, Brominco Inc. Mongeau, 1977

403-7-1-19 DDH BB-77-1, Section 1984

403-7-1-20 DDH BL-80-4, Log, Brominco Inc. Larouche, 1980

403-7-1-21 DDH BL-80-4, Section & Compilation 1980 & 1984

403-7-1-22 DDH 81-1 & 82-1 to 82-5, Logs, M.N.R.Q. Latulippe, 1982

403-7-1-23 DDH 81-1 & 82-2 to 82-5 Sections & Location Plan 1982 & 1984

# ANNAMAQUE 404

## 404-4 GEOLOGY

404-4-1 Report of Preliminary Exploration, Goldora
Techni-Counsel, Koulomzine, 1938

404-4-2 Progress Report on Diamond Drilling, Goldora
Koulomzine, Geoffroy, Norrie, Goedicke & Dumont
1944-1947

404-4-3 Various Geological Reports, Goldora
Koulomzine & Geoffroy, 1945

404-4-4 Compilation Map, Goldora, 1" = 200'
Koulomzine, 1945

404-4-5 Surface Plan with DDH 21 to 24, Goldora
Koulomzine, 1945

404-4-6 Report of Resident Geologist, Goldora
Ingham, 1945 & 1949

404-4-7 Surface Plan, Goldora
Koulomzine, Dumont & Wilson, 1950

404-4-8 Sketch Plan, Val d'Oro Extension, 1" = 100'
1941

404-4-9 Report by Resident Geologist, Paramaque
Ingham, 1944

404-4-10 Progress Report on DDH, Paramaque
Dumont, 1947

404-4-11 Report by Resident Geologist, Annamaque
Ingham, 1943 & 1952

404-4-12 Surface Map of DDH 1-25, Annamaque
1946

404-4-13 Geological Report, Annamaque
Agar, 1949

404-4-14 Surface Map of DDH D1-D12, Annamaque
1950

404-4-15 Geological Surface Map of DDH, Nemrod
1975?

404-4-16 Report by Resident Geologist, Starcourt
Ingham, 1950 & 1952

404-4-17 Geological Surface Map with DDH
Mineral Management Ltd., 1958

404-4-18 Compilation Reports, Brominco
Descarreaux, 1974-75

404-4-19 Report on Tex-Sol Property
Bergmann, 1982

404-5 GEOPHYSICS

404-5-1 **Magnetic**

404-5-1-1 Magnetic Survey, Goldora
Trenches and Values by Techni-Counsel
1938

404-5-1-2 Magnetic Survey, Goldora, S.E. Part
Koulomzine, Geoffroy & Brossard, 1944

404-5-1-3 Magnetic Survey, Goldora, S.E. Part
Intermediate Lines by K., G. & B.
Date?

404-5-1-4 Detail Magnetic Survey, Goldora, N.E. Part
Koulomzine, Geoffroy & Brossard, 1945

404-5-1-5 Magnetic Survey, Paramaque
Koulomzine, Geoffroy & Brossard, 1945
(see Paramaque file, MER)

404-5-1-6 Magnetic Survey, Starcourt
Parent, 1947

404-5-1-7 Detail Magnetic Survey, Starcourt, N. Part
Dumont, 1950

404-5-1-8 Magnetic Survey, Annamaque
Dumont, 1950

404-5-1-9 Magnetic Survey, Sullico
Bérubé, 1968

404-5-1-10 Magnetic Survey, Sullico
Lacasse, 1970

404-5-1-11 Magnetic Survey, Nemrod
1968 (see 404-5-2-5)

404-5-1-12 Magnetic Survey, Nemrod
Bérubé, 1970

404-5-1-13 Magnetic Survey, NNT
Bérubé, 1971

404-5-1-14 Magnetic Survey, NNT
Bérubé, 1971
(see 403-5-1-4)

404-5-1-15 Magnetic Survey, NNT
Bérubé, 1975

404-5-1-16 Magnetic Survey, NNT
Bérubé, 1975

404-5-1-17 Airborne Magnetic Survey, Brominco
Aerodat, 1977 (see 403-5-2-19)

404-5-2 **Electromagnetic**

404-5-2-1 HEM Survey, Dobieco Ltd.
M.E.M. Consultants Ltd., 1965

404-5-2-2 JEM Survey, Sullico
1965

404-5-2-3 VHEM & Turam, Sullico
Bérubé, 1968

404-5-2-4 VHEM, Nemrod
Bérubé, 1968

404-5-2-5 VHEM, Sullico
Lacasse, 1970

404-5-2-6 EM-16 & VHEM, Nemrod
Bérubé, 1970

404-5-2-7 EM-16, Nemrod
Bérubé, 1970

404-5-2-8 EM-16 & HEM, Nemrod
Bérubé, 1970

404-5-2-9 EM-16, NNT
Bérubé, 1971

404-5-2-10 EM-16 & VHEM, NNT
Bérubé, 1971
(see 403-5-1-4)

404-5-2-11 EM-16, NNT
Bérubé, 1972

404-5-2-12 Turam, NNT
Questor Surveys, 1972

404-5-2-13 EM-16 & HEM
Bérubé, 1975

404-5-2-14 EM-16 & HEM
Bérubé, 1975

404-5-2-15 Airborne EM, Brominco
Aerodat, 1977
(see 403-5-2-19)

404-5-2-16 MaxMin II
1979

404-5-3 **Induced Polarization**

404-5-3-1 Resistivity Survey, Starcourt
Geo-technical Development Co., 1949

404-5-3-2 I.P. Survey (gradient), Sullico
Geoterrex, 1967

404-5-3-3 I.P. Survey (gradient), Sullico
Geoterrex, 1969

404-5-3-4 I.P. Survey (Dipole-Dipole)
Groupe Minier Brossard
McPhar, 1972

404-5-3-5 I.P. Survey (gradient)
Groupe Minier Brossard
Geoterrex, 1975

404-6 GEOCHEMISTRY

404-6-2 **Soil**

404-6-2-1 Overburden Drilling, NNT
Riddell, 1975

404-6-3 **Rock**

404-6-3-1 Rock Geochemistry of DDH N-70-1,2,3
Bérubé, 1970
(see 404-7-1-18)

404-6-3-2 Rock Geochemistry, Brominco
Descarreaux, 1975

404-6-3-3 Rock Geochemistry of DDH NNT-75-3
Descarreaux, 1976

404-7 **DRILLING**

404-7-1 **Diamond Core**

404-7-1-1 DDH 1 to 80, Goldora
Koulomzine, Mauffette & Dumont, 1944-1947

404-7-1-2 DDH Sections 1 to 51, 72, 74, 77, Goldora

404-7-1-3 DDH Location Map, 1" = 200', Goldora
(see 404-4-4)

404-7-1-4 Sample Descriptions, Goldora

404-7-1-5 Assay Sheets, Goldora

404-7-1-6 DDH S-1 to S-26, E-9, Sullivan Cons.
Dumont, 1943-1945 (see 406-7-1-1)

404-7-1-7 Location Map of DDH 1-7
Central Mining Corp.
Koulomzine, 1940

404-7-1-8 Location Map of DDH 1-25, Annamaque
1946

404-7-1-9 DDH D1-D12, Annamaque
Dumont, 1950

404-7-1-10 Section D1-D12
1950

404-7-1-11 Section D1-D10 & Location Map
1975

404-7-1-12 DDH 1 to 4 & Location Map, Starcourt
Robertson, 1949

404-7-1-13 DDH S1-S15, Starcourt
Dumont, 1951

404-7-1-14 Location Map of S1-S15, Starcourt
Dumont, 1951

404-7-1-15 DDH 1 to 4 & Sections, Val d'Oro Extension
1941

404-7-1-16 DDH Sections, Paramaque
1944, 1950

404-7-1-17 DDH AB-1,2, AB-1,2-70 & CB-1-70, Sullico
Bérubé & Lacasse, 1968 & 1970

404-7-1-18 DDH 70-1,2,3 & Location Map, Nemrod
Bérubé, 1970

404-7-1-19 DDH NNT-75-1 to 5 & Location Map, NNT
Bérubé, 1975

404-7-1-20 DDH Sections NNT 75-1 to 3
Bérubé, 1975

# FARADAY 406

406-4 GEOLOGY

406-4-1 Geology Map showing S, E and V Holes, 1" = 500'
Hainsworth, 1956

406-4-2 Compilation Map, Groupe Minier Sullivan
Beauchesne, 1971

406-4-3 Geological Report
Descarreaux & Issigonis, 1975

406-4-4 Compilation Map, 1" = 100'
Mongeau, 1976

406-4-5 Geological Report
Mongeau, 1977

406-5 GEOPHYSICS

406-5-1 **Magnetic**

406-5-1-1 Magnetic Survey, Central Mining Corp.
Koulomzine, 1940
(see 404-7-1-7)

406-5-1-2 Magnetic Survey, Quebec Mining Explorers
Robertson, 1953

406-5-1-3 Magnetic Survey, Sullico
Lacasse, 1969

406-5-1-4 Magnetic Survey, Ducros
Bérubé, 1975
(see 404-5-1-15)

406-5-1-5 Airborne Magnetic Survey, Brominco
Aerodat, 1977 (see 403-5-2-19)

406-5-2 **Electromagnetic**

406-5-2-1 VHEM Survey, Sullico
Lacasse, 1969

406-5-2-2 Detail VHEM Survey & Report
Groupe Minier Sullivan
Lacasse, 1970

406-5-2-3 Detail Turam, Groupe Minier Sullivan
Sylla, 1970

406-5-2-4 EM-16, VHEM & Report, Ducros Bérubé, 1975 (see 404-5-2-13)

406-5-2-5 Report on an Input Anomaly Mongeau, 1976

406-5-2-6 VHEM & MaxMin II, Brominco Lavoie, 1977

406-5-2-7 Airborne EM, Brominco Aerodat, 1977 (see 403-5-2-19)

406-5-2-8 VHEM, MaxMin II, Brominco 1978

406-5-2-9 VHEM, MaxMin II, Brominco 1979

406-5-3 **Induced Polarization**

406-5-3-1 I.P. Survey, Sullico Geoterrex, 1969

406-5-3-2 I.P. Survey, Brossard Mining Group McPhar Geophysics, 1972 (see 400-5-3-10)

406-7 **DRILLING**

406-7-1 **Diamond Core**

406-7-1-1 DDH S-1 to 27, Sullivan Cons. Dumont & Cooper, 1943-1945

406-7-1-2 DDH E-1 to 21, East Sullivan Dumont, 1945-1952

406-7-1-3 Location Map of E and S Holes (see 406-5-1-2)

406-7-1-4 DDH V-1 to 10, Vankirk Hainsworth, 1956

406-7-1-5 Location Map of V Holes Hainsworth, 1956 (see 406-4-1)

406-7-1-6 DDH FB-1-70, G.M.S. Lacasse, 1970

406-7-1-7 DDH BB-77-2, Brominco Mongeau, 1977

APPENDIX I

List of Claims

## SABOURIN CREEK CLAIMS

| Licence Number | Claims | Area (ha) |
|---|---|---|
| C00891 | 87960,61 | 61.2 |
| C00892 | 87962,63,64 | 84.24 |
| 324503-A | 1 | 16 |
| 319901 | 2,3 | 32 |
| 319614 | 3,4 | 32 |
| 324504 | 1,2 | 32 |
| 321565 | 2,3,4 | 48 |
| 317058-B | 4 | 16 |
| 345588 | 3,4,5 | 48 |
| 345587 | 1,2,3,4,5 | 80 |
| 347182 | 1,2,3,4,5 | 80 |
| 350454 | 1,2,3,4,5 | 80 |
| 350455 | 1,2,3,4,5 | 80 |
| 350456 | 1,2,3,4,5 | 80 |
| 317315 | 1,2,3,4,5 | 80 |
| 317316 | 1,2,3 | 48 |
| 317314 | 1,4,5 | 42 |
| 314591-A | 3,4,5 | 48 |
| 277886 | 1,2,3,4,5 | 80 |
| 277885 | 1,2,3,4,5 | 80 |
| 360925 | 1,2,3,4,5 | 80 |
| 360926 | 1,2,3,4,5 | 80 |
| 360927 | 1,2,3,4,5 | 80 |
| 360928 | 1,2,3,4,5 | 80 |
| 392302 | 1,2,3,4,5 | 80 |
| 392303 | 1,2,3,4,5 | 80 |
| | 98 Claims | 1,627.44 |

N.B. All Sabourin Creek claims were covered by 1984 VLF survey.

## ANNAMAQUE CLAIMS

| Licence Number | Claims | Area (ha) |
|---|---|---|
| 319791 | 1,2,3,4,5 | 78 |
| 319792 | 1,2,3,4*,5* | 80 |
| 301365 | 1,4*,5 | 48 |
| 301366 | 1,4 | 32 |
| 301331 | 1,2 | 32 |
| 275538 | 1,2,4* | 48 |
| 277890 | 1,2*,3*,4*,5 | 80 |
| 319840 | 1,2,3,4,5 | 80 |
| 349095 | 1,2,3,4,5 | 80 |
| 349096 | 1,2,3,4,5 | 80 |
| 319841 | 1,2,3,4 | 64 |
| 319779 | 2,3,4,5* | 64 |
| 321562 | 1*,2*,3 | 48 |
| 304580 | 2,3 | 32 |
| 304525 | 3,4 | 32 |
| 277884 | 1,2 | 32 |
| 317314 | 2,3 | 32 |
| 301330 | 1 | 16 |
| | 60 Claims | 958 |

* Denotes Annamaque claims covered by 1984 VLF survey.

## FARADAY CLAIMS

| Licence Number | Claims | Area (ha) |
|---|---|---|
| C-175 | A69330,31,32,33,34 | 82.4 |
| C-178 | A69335*,36*,37* | |
| | A72108 | 81.2 |
| C-565 | A63085* | 49.88 |
| C-566 | A63086,87 | 41.96 |
| | 12 Claims | 255.44 |

* Denotes Faraday claims covered by 1984 VLF survey.

# APPENDIX II

## Instrument Specifications

## (Phoenix Geophysics Limited)

# Specifications

| | | |
|---|---|---|
| **Parameters 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). |

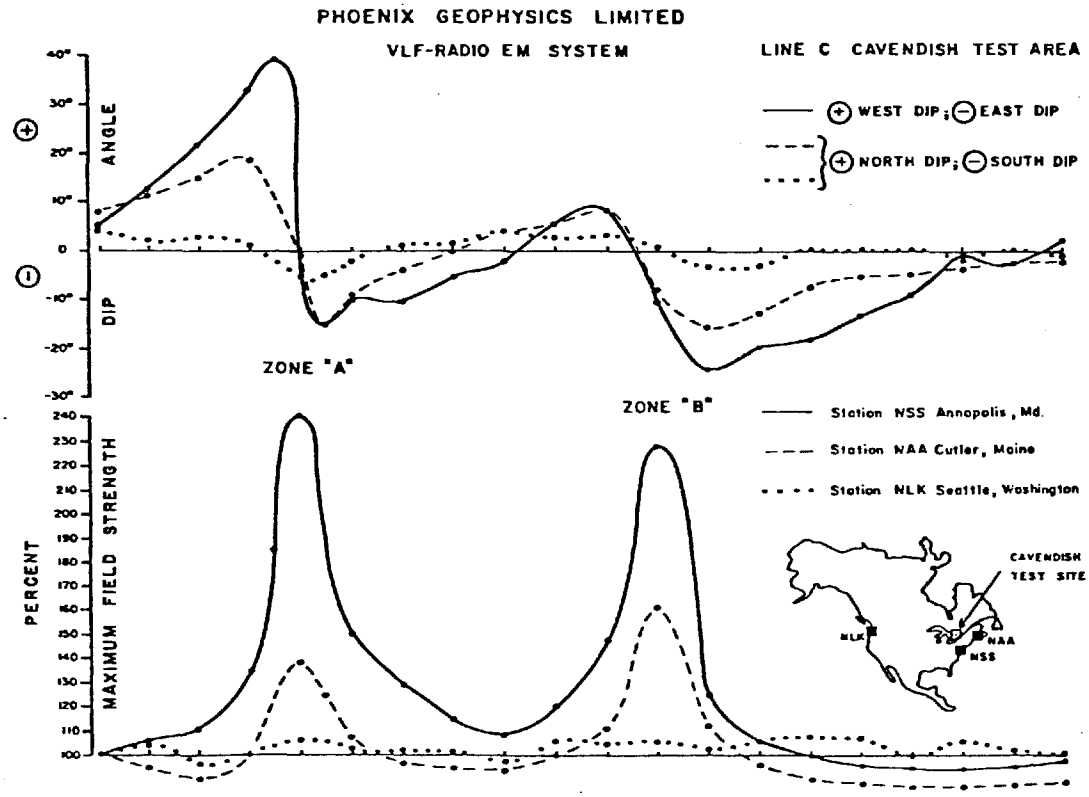
All of the established stations may be selected, or alternatively, a local VLF transmitter may be used which transmits at any frequency in the range 14.0 to 29.9 kHz.

| 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 |
| Malabar, Java | 19.0 |
| Oxford, U.K. | 19.6 |
| Paris, France | 20.7 |
| Annapolis, Maryland | 21.4 |
| Northwest Cape, Australia | 22.3 |
| Lauluolei, Hawaii | 23.4 |
| Buenos Aires, Argentina | 23.6 |
| Seattle, Washington | 24.8 |
| 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.

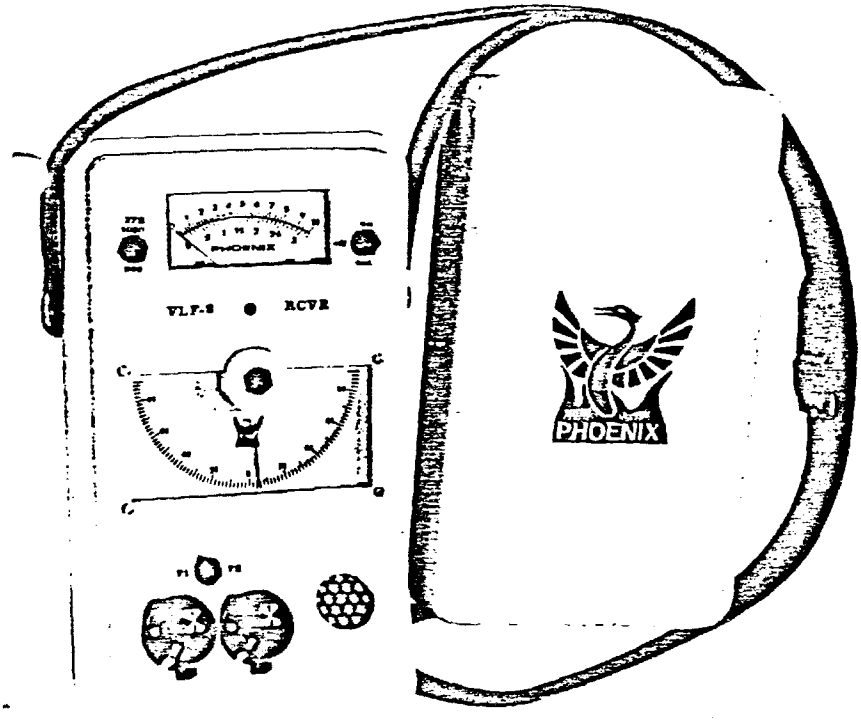
The results obtained using Cutler, Maine reveal a more prominent anomaly, but the best response was obtained using Annapolis, Maryland since the station lies almost due south and the transmitted electromagnetic field is thus maximum-coupled with the North-South trending conductors.



# VLF-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

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