# MACMILLAN JOINT VENTURE

GEOPHYSICAL SURVEYS
AUGUST-SEPTEMBER 1979
SUE CLAIMS NTS 105/L/14
WHITEHORSE MINING DISTRICT

135°15' W Longitude
62°48' N Latitude



Field Supervision by G. R. Kent

090501

Toronto, Ontario,
October 1, 1979.

C. K. O'Connor, P.Eng.

This report has been examined by the Geological Evaluation Unit and [illegible] mended to the Commissioner to be ed as representation work in the [illegible]

$ 14,200.00

J A Morin

Resident Geologist or
Professional Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. R. BAXTER
Supervising Mining Recorder

for Commissioner of Yukon Territory

# TABLE OF CONTENTS



## APPENDICES

# LIST OF MAPS IN FOLDER

| | | |
|---|---|---|
| Grid Location Map | | 1" = 1000' |
| Grid 1W | | |
| | East Half EM Survey 444 Hz | 1" = 200' |
| | East Half EM Survey 1777 Hz | 1" = 200' |
| | West Half EM Survey 444 Hz | 1" = 200' |
| | West Half EM Survey 1777 Hz | 1" = 200' |
| Grid 2W | | |
| | EM Survey 444 Hz | 1" = 200' |
| | EM Survey 1777 Hz | 1" = 200' |

Summary

This report describes the results of horizontal loop ground electromagnetic surveys carried out on a portion of the Sue claim group in the Whitehorse Mining District during August-September, 1979.

Several valid bedrock responses were obtained, one of which had been previously tested by diamond drilling and was found to be caused by graphitic argillites.

Numerous out-of-phase responses reflecting topography were also obtained.

Further exploration utilizing gravimetry and soil sampling is recommended.

## Conclusions and Recommendations

A total of three definite bedrock anomalies were detected. One has been drilled and found to be caused by graphitic argillite. The other two are presumed to have a similar cause. Several probable and numerous doubtful anomalies are probably overburden responses.

Due to the considerable number of graphitic conductors known in the general area of the grids, electromagnetic surveys are not of themselves considered diagnostic of sulphide mineralization. It is recommended that gravity surveys and soil sampling be carried out to qualify the electromagnetic results and perhaps detect non-conductive anomalies of possible significance. The gravity surveys should be done during the winter to complete coverage of those parts of the grids covered by lakes. Soil sampling results are considered positive when anomalies are obtained, but due to the presence of recent glacial overburden, are not considered diagnostic if results are negative.

## Introduction

Electromagnetic surveys were carried out over a portion of the Sue claim group along the projected strike of the same geological formations hosting the Clear Lake massive sulphide deposit a short distance to the east.

An Input survey completed by Conwest in late 1978 indicated several anomalies in the gridded area. In addition the Clear Lake sulphide zone gives a moderate to strong EM response.

The grids were established by Ketza Enterprises Ltd. of Ross River and the electromagnetic surveys were carried out by Can Lake Explorations Ltd. of Calgary.

G. R. Kent of Conwest supplied field supervision and the writer interpreted the results in consultation with Mr. Kent.

## Location and Access

The Sue Claim group lies approximately 150 miles due north of Whitehorse on the north side of the Pelly River.

There is no all weather road access to the claims. A winter tractor road from Pelly Crossing on the Klondike Highway can be used to freight supplies overland to the property during January to April, a distance of about 60 miles.

During August 1979, an airstrip was constructed on the Sue claims a short distance west of the grids described in this report. This airstrip is approximately 3,000' by 150' and is suitable for most fixed wing aircraft up to DC-3. This airstrip was utilized for mobilization and demobilization of the survey crews. Helicopter support is required for local transport on the claims beyond walking distance from the base camp located at the strip.

The nearest settlements are Mayo, 60 miles north northwest; Faro, 70 miles southeast; and Carmacks, 60 miles southwest.

Topography in the area of the grids is subdued low rolling terrain varying from 2,000' to 2,500' ASL and dotted with numerous small lakes most of which are too small for float equipped aircraft.

Vegetation consists of spruce, pine, birch, poplar and alders although most was destroyed by a fire in 1970.

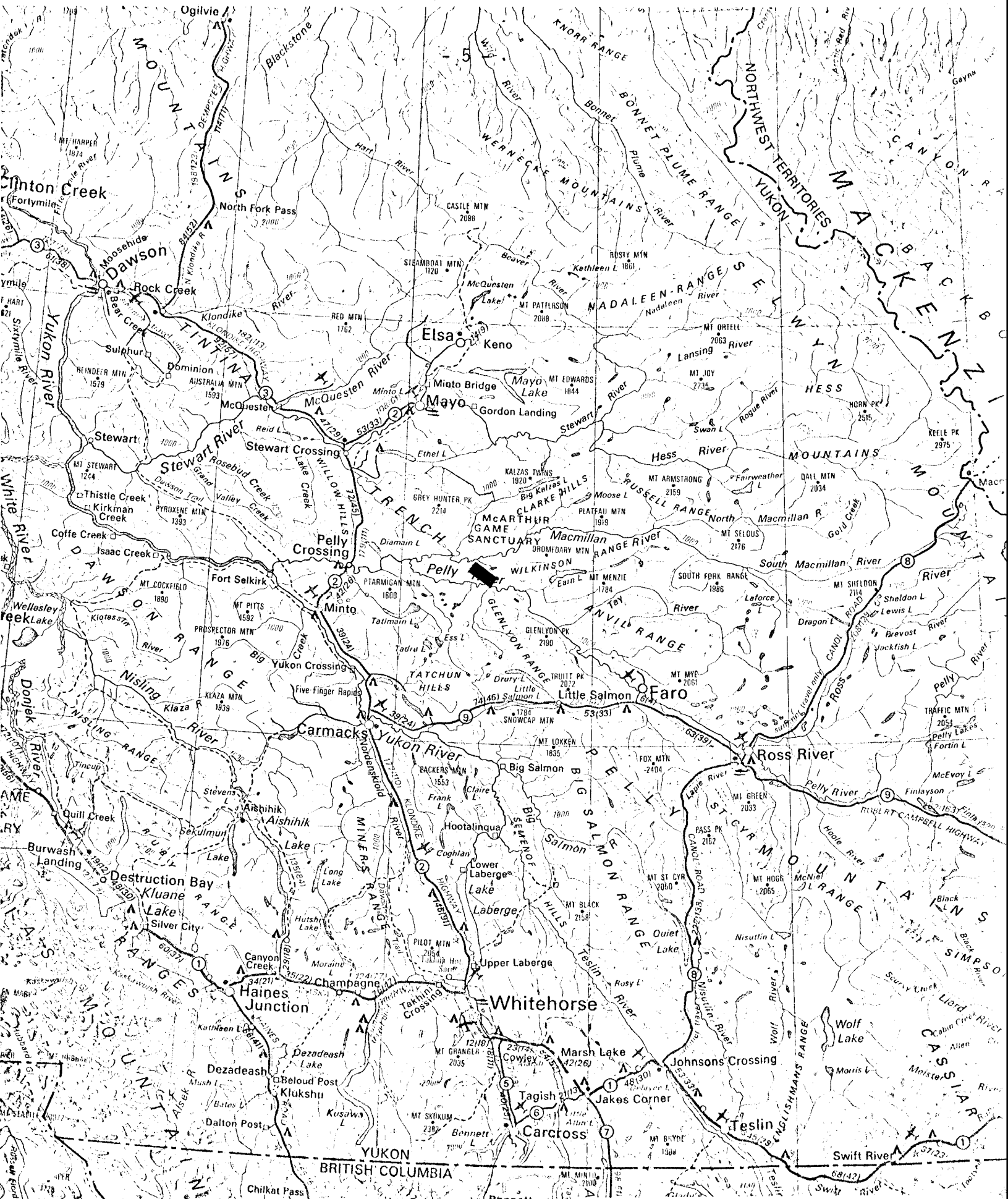



FIGURE I
Location Map
Sue Claims
Whitehorse Mining District
1" = 40 miles

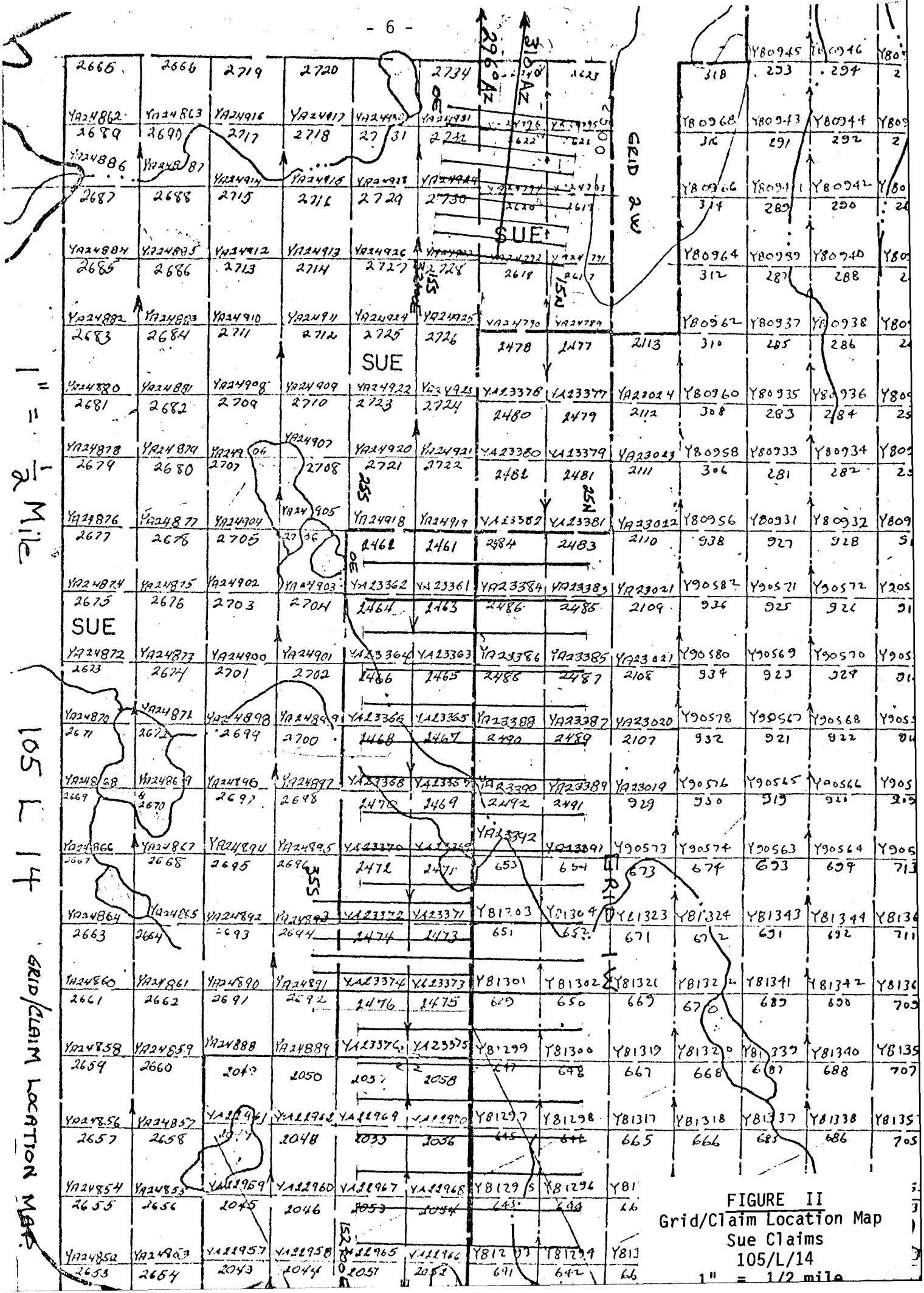



FIGURE II
Grid/Claim Location Map
Sue Claims
105/L/14
1" = 1/2 mile

General Geology

The Glenlyon map area (105 L) was mapped by R. B. Campbell in 1949-1954 and the results of his work were published as G.S.C. Memoir 352 in 1967.

The adjoining Tay River map area (105 K) was mapped by Roddick and Green in 1958-1960 and published as G.S.C. Map 13-1961. In 1967 and 1968 Templeton-Kluit undertook a more detailed study of the geology and mineral deposits of the Vangorda area, the results of which were published as G.S.C. Bulletin 208 in 1972.

The area of interest comprises a belt of Proterozoic and Paleozoic sediments and volcanics which follow the northeast side of the Pelly River, the latter marking the locus of a major transcurrent fault known as the Tintina Trench.

The Sue claims are partially underlain by schists, phyllites and greenstones in the north part of the group identical to those hosting the deposits in the Vangorda area. Probable Devono-Mississippian argillites, limestones, dolomites and quartzites with minor conglomerates, tuffs, trachytes and gabbros underlie the south part of the claim group including the area covered by the grids. Outcrop is confined to large knobs of quartzite up to 200' of local relief. The soft recessive weathering argillites and tuffs do not

outcrop but have been intersected in drill holes along strike to the east.

Overburden is generally less than 100 feet thick. Glaciation in a west northwesterly direction has shaped numerous drumlins trending slightly south of grid west.

Previous Work

The gridded areas lie on the southerly fringe of a much larger grid established in 1975 and on which extensive mag, E.M. and gravity surveys were conducted. The results of these surveys were reported as assessment work as follows:

1. Progress Report Number 1 - On Geophysical Surveys - 1975 by C. K. O'Connor and D. B. Sutherland, Conwest Exploration Company Limited.

2. Gravity Survey and Interpretation - August 1976 by J. E. Wyder, Kenting Earth Sciences Limited.

3. Gravity Survey and Interpretation - April 29, 1977 by D. Dorval and T. R. Dundas, Kenting Earth Sciences Limited.

In addition results of certain diamond drilling performed during the summer of 1978 were submitted for assessment credit under covering letter dated August 29, 1978 by G. R. Kent. Hole #78-17 is located on grid 1 W at approximately L 132 E, 11 N and tested the strong EM conductor in that location.

Conwest contracted out an Input survey in the fall of 1978 which survey covered a large area including the claims reported on herein. Most of the airborne responses were reflected in the ground survey results.

## Discussion of Results

The electromagnetic survey utilized on Apex Parametrics MAXMIN II horizontal loop system (see Appendix I for specifications). Lines were spaced at 400' and 800' intervals with readings taken at 30.5 metre (100') stations on 444 Hz and 1777 Hz. Coil separation of 122 metres (400') was used.

## Grid No. 1 West

This grid is divided into two map sheets for convenience. Only two definite bedrock conductors were located, one on each sheet as follows:

a) L 40 E to L 56 E, 25 S to 23 S, strong amplitude but poor conductivity, open along strike and full width unknown; reflection of Input conductor, probably caused by formational graphitic argillite, if gravity response positive extension of grid to the south is recommended.

b) L 136 E to L 152 E, 9 N to 6 N, weak to strong amplitude, fair conductivity, sharply terminated at west end suggesting a fault, open to the east, probable north dip, tested by DDH 78-17 located approximately at 132 E, 11 N drilled grid south, conductor explained by graphitic argillite.

Numerous possible bedrock responses were obtained elsewhere on the grid. Generally these anomalies are primarily out-of-phase and show a sharp fall-off in amplitude at the lower frequency suggesting an overburden response. Short cable effects on the in-phase distort the profiles making interpretation difficult, however, none of these anomalies are sufficiently diagnostic to warrant further consideration unless supported by a positive gravity response.

Grid No. 2 West

Only one definite bedrock response is located on this grid and trends roughly grid east-west for at least 2,800'. The anomaly is open to the west and appears terminated at the east end.

Amplitude is weak to medium and the conductivity is generally poor suggesting a weakly graphitic argillite as the probable cause. Gravity surveys should be carried out to determine if sulphides are present. The balance of the grid gives a wavy profile on the higher frequency typical of moderately conductive overburden.

# APPENDIX I

## APEX MAXMIN II EM SYSTEM SPECIFICATIONS

| | |
|---|---|
| OPERATING FREQUENCIES: | 222, 444, 888 and 1777Hz |
| COIL SEPARATIONS: | 100, 200, 300, 400, 600 and 800 feet |
| MODES OF OPERATION: | (a) Tx coil plane and Rx coil plane horizontal (Horizontal loop mode).<br>(b) Tx coil plane horizontal and Rx coil plane vertical (Minimum coupled mode). |
| PARAMETERS MEASURED: | In-Phase and Quadrature component of the secondary field. |
| READOUTS: | Automatic, direct readout on 3½" size meters. |
| SCALE RANGES: | In-Phase: ±20% normal, ±100% by switch.<br>Quadrature: ±20% normal, ±100% by switch.<br>Inclinometers: ±50% tilt. |
| READING REPEATABILITY: | ±½% to ±1% |
| RX BANDWIDTH (-3dB): | 0.2 Hz nominal |
| RX INTERNAL NOISE: | Negligible |
| TX DIPOLE MOMENTS: | 150 $Atm^2$ @ 222 Hz, 150 $Atm^2$ @444 Hz,<br>75 $Atm^2$ @ 888 Hz, 50 $Atm^2$ @ 1777 Hz. |
| RX POWER SUPPLY: | Four 9V batteries (transistor radio type) |
| TX POWER SUPPLY: | Three 6 V alkaline lantern batteries in a separate battery pack. Optionally one 12V 8Ah rechargeable Gel Cell. |
| REFERENCE CABLE: | Light weight, low friction unshielded cable. Unit supplied with 200, 400 and 600 ft cables, other lengths optional. |
| WEIGHT OF RX UNIT: | 13 lbs. |
| WEIGHT OF TX UNIT: | 30 lbs. |
| OTHER MAIN FEATURES: | Built-in Intercom system for communication between receiver and transmitter unit. Signal and reference warning lights to indicate erraneous readings. |

FOR MORE INFORMATION,
PHONE (416) 491-6388 OR WRITE TO:

APEX PARAMETRICS LTD.
255 YORKLAND BLVD., WILLOWDALE, ONTARIO, CANADA M2J 1S3

# APPENDIX II

## PERSONNEL

CONWEST EXPLORATION COMPANY LIMITED
1010 - 85 Richmond Street West,
Toronto, Ontario, M5H 2G1:

| | |
|---|---|
| G. R. Kent | Field Supervision for duration of programme |
| C. K. O'Connor | September 28, October 1, 1979. |

CAN LAKE EXPLORATIONS LTD.
4001 - 19 Street N.E.,
Calgary, Alberta:

| | |
|---|---|
| J. Johnston | September 3 - 16th inclusive<br>MAXMIN II Electromagnetic Survey |
| D. Jarecki | September 3 - 16th inclusive<br>MAXMIN II Electromagnetic Survey |

KETZA ENTERPRISES LTD.
Ross River,
Yukon Territory, YOB 1SO:

| | | |
|---|---|---|
| Louie Tommie<br>Ron Etzel<br>Charlie Ollie<br>Lash Ladue<br>Fred Peter<br>Jerry Ladue | Ross River<br>Yukon | All July 20 - August 18<br><br>Linecutting and Chaining |

APPENDIX III

STATEMENT OF EXPENDITURES

Sue Claim Group

MAXMIN EM Surveys

August - September 1979

| | | | |
|---|---|---|---|
| Grid Preparation | - | Ketza Enterprises Ltd. | $11,082 |
| Geophysical Surveys | - | Can Lake Explorations Ltd. | 8,321 |
| Helicopter Support | | | 1,630 |
| Fixed Wing Support | | | 560 |
| | | | $21,593 |

I certify the above to be a true and correct statement of expenditures.

CONWEST EXPLORATION COMPANY LIMITED

C. K. O'Connor - Vice-President

J. A. Patterson - Secretary-Treasurer

October 1, 1979.

# APPENDIX IV

## CALCULATION OF UNIT COSTS

| | | |
|---|---|---|
| Grid 1 W | - | 29.94 miles |
| Grid 2 W | - | 7.00 miles |
| Total | | 36.94 miles |
| Total Cost | | $21,595 |
| Cost per Line Mile | | $584.54 |

## APPENDIX V

## CERTIFICATE

I, Caven Kelly O'Connor, hereby certify that:

1. I am a geologist residing at 109 Inglewood Drive, Toronto, Ontario.

2. I received a Bachelor of Applied Science degree in Geological Engineering from the University of Toronto in 1962 and I have been practising my profession since that time.

3. I am a member of the Professional Engineers Associations of Ontario and British Columbia.

4. I am the author of this report and directed the overall conduct of the programme described herein.

5. I am a Director and Vice-President of Conwest Exploration Company Limited, having been employed by the Company since January 1969.

REGISTERED PROFESSIONAL ENGINEER
C. K. O'CONNOR
PROVINCE OF ONTARIO

C. K. O'Connor, P.Eng.,
Geologist.

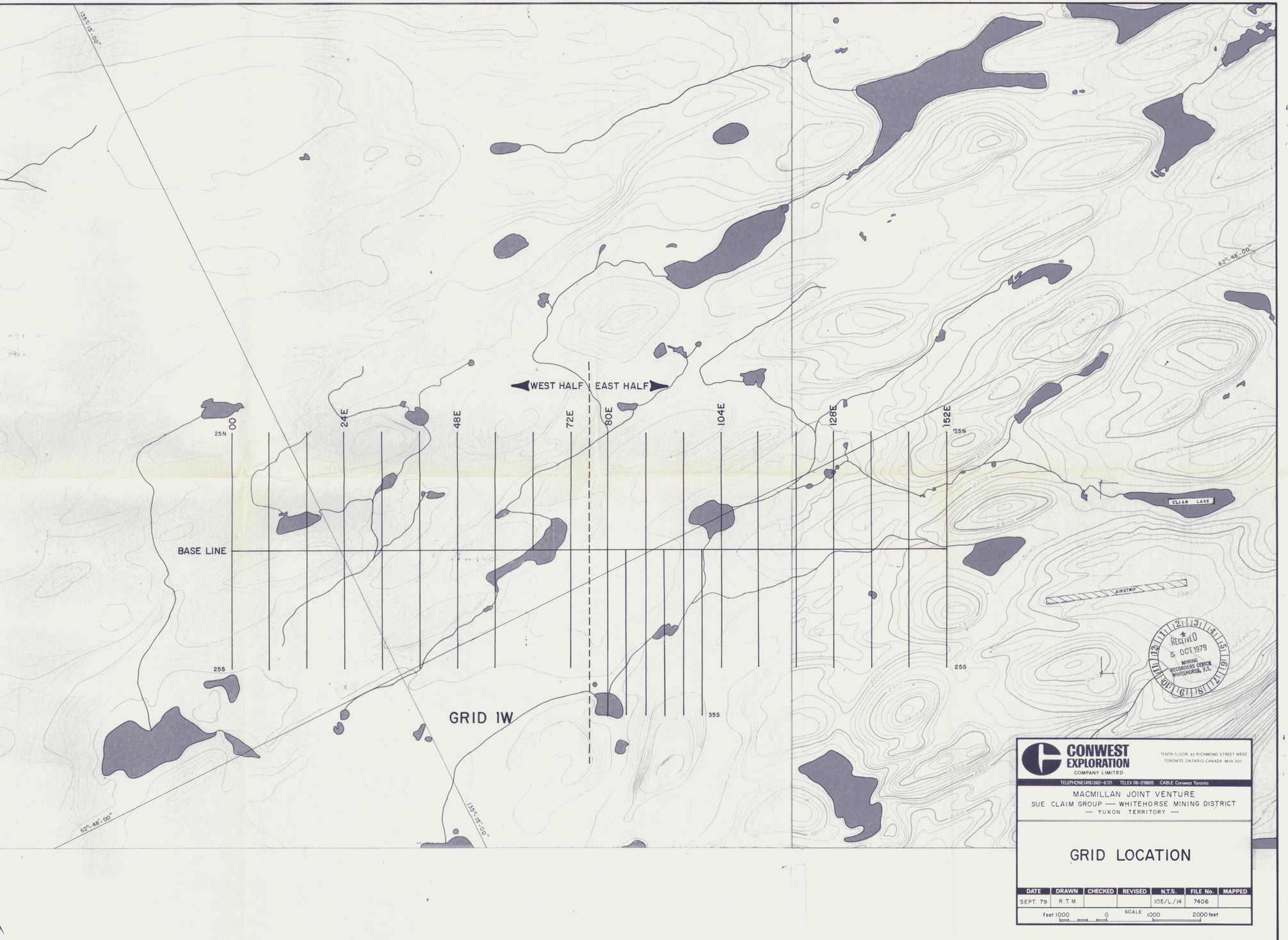
Toronto, Ontario,
October 1, 1979.

# APPENDIX VI

(See Maps in Folder Attached)


GRID 2W




**CONWEST EXPLORATION COMPANY LIMITED**

TENTH FLOOR 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1

TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto

MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# GRID LOCATION

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

feet 1000 0 SCALE 1000 2000 feet

80E 88E 96E 104E 112E 120E 128E 136E 144E 152E

25N 20N 15N 10N 5N

Lake

Pond

BASE LINE

5S 10S 15S 20S 25S 30S 35S

Lake

80E 84E 88E 92E 96E 100E 104E 112E 120E 128E 136E 144E 152E

SHEET INDEX

| WEST | EAST |
|---|---|

M.N. 33°

LEGEND

Instrument ..... Apex Parametrics MAXMIN II
Coil separation ..... 400 feet
Operating frequency ..... 444 Hz
Profile plotted at midpoint between coils
Plotting configuration ..... – | +
Profile scale ..... 1" = 20%
Inphase profile .....
Quadrature profile .....
Possible error – rough topography ..... sc
Conductor axis .....
Conductor showing width .....



CONWEST EXPLORATION COMPANY LIMITED
TENTH FLOOR, 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1
TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto

MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# MAXMIN E.M. SURVEY
# GRID No. 1WEST
## EAST HALF
444 Hz

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

SCALE
feet 200 0 200 400 600 800 feet

00 8E 16E 24E 32E 40E 48E 56E 64E 72E

25N 20N 15N 10N 5N BASE LINE 5S 10S 15S 20S 25S

sc cliff cliff sc Pond Pond Lake Lake Lake sc

64E

00 8E 16E 24E 32E 40E 48E 56E 72E

SHEET INDEX

| WEST | EAST |
|---|---|

M.N. 33°

LEGEND

| | |
|---|---|
| Instrument | Apex Parametrics MAXMIN II |
| Coil separation | 400 feet |
| Operating frequency | 444 Hz |
| Profile plotted at midpoint between coils | |
| Plotting configuration | − \| + |
| Profile scale | 1" = 20% |
| Inphase profile | —— |
| Quadrature profile | - - - - |
| Possible error – rough topography | sc |
| Conductor axis | |
| Conductor showing width | |



CONWEST EXPLORATION COMPANY LIMITED
TENTH FLOOR, 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1
TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto

MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# MAXMIN E.M. SURVEY
# GRID No. 1 WEST
## WEST HALF
444 Hz

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

SCALE
feet 200 0 200 400 600 800 feet

80E 88E 96E 104E 112E 120E 128E 136E 144E 152E

25N 20N 15N 10N 5N

Lake

Pond

BASE LINE

5S 10S 15S 20S 25S 30S 35S

Lake

Lake

80E 84E 88E 92E 96E 100E 104E 112E 120E 128E 136E 144E 152E

SHEET INDEX

| WEST | EAST |
|---|---|

M.N. 33°

LEGEND

Instrument ..... Apex Parametrics MAXMIN II
Coil separation ..... 400 feet
Operating frequency ..... 1777 Hz
Profile plotted at midpoint between coils
Plotting configuration ..... — + —
Profile scale ..... 1" = 20%
Inphase profile ..... ——
Quadrature profile ..... - - - -
Possible error – rough topography ..... sc
Conductor axis ..... ——
Conductor showing width .....

RECEIVED
5 OCT. 1979
MINING RECORDERS OFFICE WHITEHORSE, Y.T.


CONWEST EXPLORATION COMPANY LIMITED
TENTH FLOOR, 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1
TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto


MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# MAXMIN E.M. SURVEY
## GRID No. 1WEST
### EAST HALF
1777 Hz

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

SCALE
feet 200 0 200 400 600 800 feet


SHEET INDEX

| WEST | EAST |
|---|---|

M.N. 33°

LEGEND

| | |
|---|---|
| Instrument | Apex Parametrics MAXMIN II |
| Coil separation | 400 feet |
| Operating frequency | 1777 Hz |
| Profile plotted at midpoint between coils | |
| Plotting configuration | − \| + |
| Profile scale | 1" = 20% |
| Inphase profile | —— |
| Quadrature profile | - - - - |
| Possible error – rough topography | sc |
| Conductor axis | |
| Conductor showing width | |



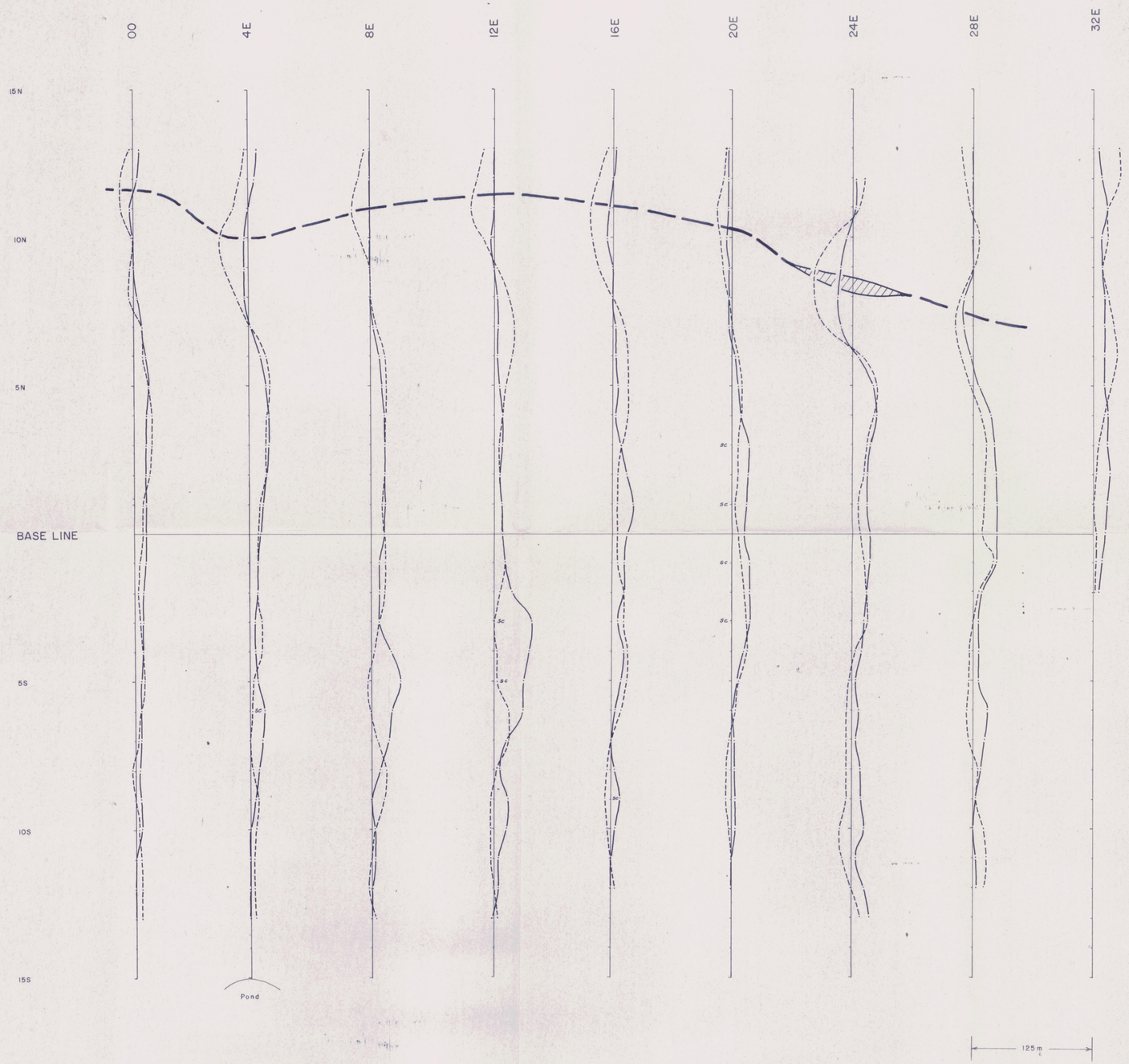
CONWEST EXPLORATION COMPANY LIMITED
TENTH FLOOR, 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1
TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto

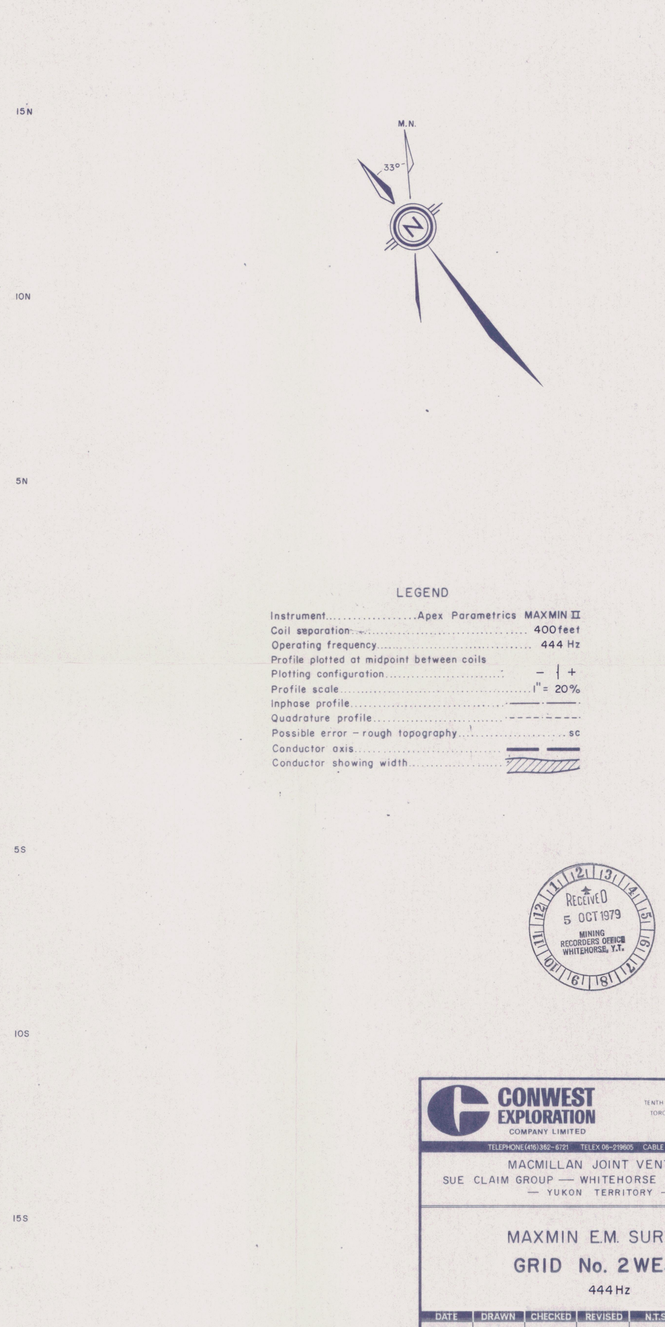
MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# MAXMIN E.M. SURVEY
## GRID No. 1 WEST
### WEST HALF
1777 Hz

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

SCALE
feet 200 0 200 400 600 800 feet







LEGEND

| | |
|---|---|
| Instrument | Apex Parametrics MAXMIN II |
| Coil separation | 400 feet |
| Operating frequency | 444 Hz |
| Profile plotted at midpoint between coils | |
| Plotting configuration | − \| + |
| Profile scale | 1" = 20% |
| Inphase profile | ——— |
| Quadrature profile | - - - - - |
| Possible error – rough topography | sc |
| Conductor axis | ——— |
| Conductor showing width | |



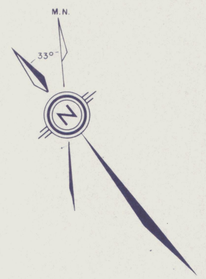

CONWEST EXPLORATION COMPANY LIMITED
TENTH FLOOR 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1
TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto

MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# MAXMIN E.M. SURVEY
## GRID No. 2 WEST
444 Hz

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

feet 200 0 SCALE 200 400 feet


LEGEND

| | |
|---|---|
| Instrument | Apex Parametrics MAXMIN II |
| Coil separation | 400 feet |
| Operating frequency | 1777 Hz |
| Profile plotted at midpoint between coils | |
| Plotting configuration | − + |
| Profile scale | 1" = 20% |
| Inphase profile | ——— |
| Quadrature profile | - - - - - |
| Possible error – rough topography | sc |
| Conductor axis | |
| Conductor showing width | |



CONWEST EXPLORATION COMPANY LIMITED
TENTH FLOOR 85 RICHMOND STREET WEST
TORONTO, ONTARIO, CANADA M5H 2G1
TELEPHONE (416) 362-6721 TELEX 06-219605 CABLE Conwest Toronto

MACMILLAN JOINT VENTURE
SUE CLAIM GROUP — WHITEHORSE MINING DISTRICT
— YUKON TERRITORY —

# MAXMIN E.M. SURVEY
# GRID No. 2 WEST
1777 Hz

| DATE | DRAWN | CHECKED | REVISED | N.T.S. | FILE No. | MAPPED |
|---|---|---|---|---|---|---|
| SEPT. 79 | R.T.M. | | | 105/L/14 | 7406 | |

feet 200 0 SCALE 200 400 feet