

TABLE OF CONTENTS

Introduction 1.
Airborne Geophysical Survey 1.
Geochemical and Geological Survey 2.
Conclusions and Recommendations 4.

Appendix I- Affidavit 7.
Appendix II- Statement of Costs 8.
Appendix III- Personnel 9.

MAPS

Figure 1- Key Map
Figure 2- Airborne EM Survey
Figure 3- Airborne Mag Survey
Figure 4- Geology
Figure 5- Copper Geochemistry
Figure 6- Lead Geochemistry
Figure 7- Zinc Geochemistry
Figure 8- Airborne Geophysical Interpretation
Overlay.

INTRODUCTION

During the 1966 field season, an airborne geophysical survey and combined geochemical and geological survey was conducted on the TARA, HAL, DANE and MARK claim groups under the supervision of the writer. These four groups comprise one contiguous block of 280 claims, completely surrounding the IVAN claims of Anvil Mining Corp. Ltd., in claim sheet 105-K-11. They are collectively referred to as the Caribou Lake property. They are owned by Yukon Copper Ltd., and all work was performed by contractors working for Archer, Cathro and Associates Ltd., or employees of that firm.

The exploration techniques used in this program were patterned after the successful approach developed in this district by Dynasty Explorations Ltd., and were selected to locate any mineralized zones which are present on the property. Caribou Lake lies within the claim group and will accomodate small aircraft. The nearest road is at Anvil's FARO camp, 15 miles south.

AIRBORNE GEOPHYSICAL SURVEY

A combined magnetometer (Mag) and electromagnetometer (EM) survey was conducted under contract by Lockwood Survey Corp. Ltd. on July 2 and 13, 1966. The equipment was mounted in a Bell 204 B turbine helicopter on charter from Okanagan

Helicopters Ltd. A total of 208 line miles was surveyed.

A preliminary plot of the Mag and EM data was made in the field, on contract by Explorations Geophysics (Yukon) Ltd., and interpreted by Dr. D.W. Smellie, consulting geophysicist, of that firm. The preliminary plotting and interpretation, which was based on uncorrected data, was made to detect top priority anomalies which required immediate follow-up before the end of the summer. It was anticipated that final data reduction by Lockwood would take some time and it was not received until December. The results of this survey are shown in Figures 2 and 3, and Figure 8 is an interpretational overlay by Dr. Smellie.

GEOLOGICAL & GEOCHEMICAL SURVEY

The Caribou Lake property lies at the contact between the Mississippian schists and Devonian sediments. A major regional fault, which strikes NW parallel to the Tintina Fault, is thought to cross the property, passing through the NE corner of Anvil's IVAN claims. Subsidiary faults related to it have been postulated from relationships between different rock units, airphoto lineations and the drainage pattern (Figure 4).

Less than 10% of the property is outcrop. The Devonian rocks are comprised mostly of chert and carbon-

aceous, locally graphitic, argillite. Little evidence of folding was observed.

Reconnaissance geochemical sampling was conducted along the claim base lines, using a 400 foot sample interval. A total of 579 samples were collected and analyzed.

Control for the sampling was provided by aerial photographs, tape and compass. Sample locations were marked with plastic flagging. Sampling was done with a mattock grub-hoe and wherever possible the B 1 horizon was sampled. In a few case permafrost prevented the taking of an ideal sample, free from organic matter or volcanic ash. However, since geochemical targets in this district are large and the spacing of the samples was fairly close, it is felt that nothing significant has been missed.

The samples were collected in individual small kraft bags and sent to Atlas Testing Labs, Edmonton, for analysis. Analysis consisted of hot aqua regia extraction of heavy metal ions from the screened and dried sample, and metal content determination by atomic absorption. All samples were analyzed for copper, lead and zinc.

Figures 5, 6 and 7 show the plotted values for copper, lead and zinc respectively. The best results were obtained just southwest of the IVAN group in Mississippian schist

4.

and greenstone. A second metal positive area lies immediately west of the IVAN claims. Disseminated chalcopyrite and sphalerite were found in a gossan in this area. Other isolated high values were found for all three metals in other parts of the property, some of them close to geophysical anomalies.

About 10,000 feet of baseline was cut in three separate grids during August in preparation for ground geophysical surveys. The location of these lines is shown on Figure 4.

CONCLUSIONS AND RECOMMENDATIONS

The airborne geophysical survey revealed a belt of high ratio EM anomalies with some coincident mag. response. The results were interpreted by D.W. Smellie, P. Eng., in a report dated Dec. 20, 1966, as follows (see Figure 8):

"A belt of good-quality E.M. anomalies occurs in Devonian chert, shale and quartzite. Zones A, B and C in particular are contiguous to an inferred NE fault shown on the geological map of Archer and Cathro. The presence of an intrusive to the west is also considered favourable.

Electromagnetic Zones A to I inclusive mark good-quality conductors and are all recommended for ground magnetic, electromagnetic and geochemical surveys. They are shown on the accompanying

. . 5.

interpretational overlay.

Approximate boundaries of some magnetic bodies are also marked."

Strong Mag and moderate EM anomalies are associated with the metal positive area southwest of the IVAN claims. Mag and EM response was poor in the area west of the IVAN claims.

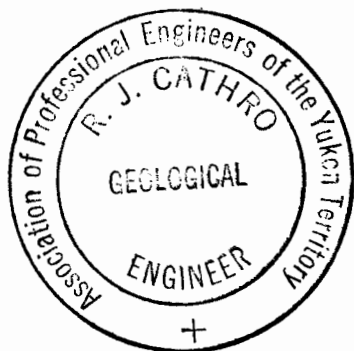
The drilling by Anvil on its adjoining IVAN claims has confirmed that copper, lead and zinc sulfides exist in the Devonian rocks. However, it must be pointed out that the chert and argillite represent a totally different mineral environment from the Mississippian schist and there is no reason to assume that economic mineralization, if present, will necessarily be similar in nature to the known deposits in the area. While keeping in mind, therefore, that the Caribou Lake property is different in many respects from the Anvil-Vangorda schist belt, it should be emphasized that the property has responded well to initial exploration and definitely justifies an extensive follow-up program.

A program of linecutting and ground Mag and EM surveys over the best targets should be followed by a diamond drill program. A contingency for gravity of I.P. surveys, depending on whether massive or disseminated mineralization is present, is also included. Since these anomalies are not within the schist belt, experience gained in previous exploration in this district is of only limited value and

many techniques which have been very successful there may be less so in the Devonian sedimentary environment. For that reason, a certain amount of test work will be required and the program will have to be flexible to take advantage of early experience in the field. The estimated cost of this program is: (with transportation and camp costs included in each case)

- 1. Linecutting- 50 LM @ \$100.00 \$5000.00
- 2. Soil sampling, incl. analysis 10000.00
- 3. Ground Mag and EM- 50 LM @ \$100.00 5000.00
- 4. Gravity or I.P.- 30 LM @ \$00.00 12000.00
- 5. Diamond drilling- 5,000 feet @ \$15.00 75000.00
- 6. Supervision, reports 10000.00

Sub-total \$117,000.00
 Contingencies 10% 12,000.00
 Grand total \$129,000.00



Respectfully submitted,
 ARCHER, CATHRO & ASSOC. LTD.

R. J. Cathro

 R.J. Cathro, P. Eng.


RJC:ps

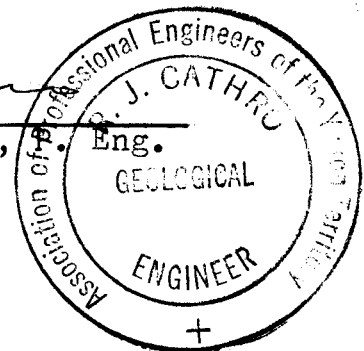
Appendix I

AFFIDAVIT

I, Robert J. Cathro, Consulting Geological Engineer, of Whitehorse, agent for Yukon Copper Limited, have compiled the statement of costs presented in Appendix II of this report, and do hereby make oath and say:

That to the best of my knowledge and belief, the statement of costs as presented is a true and accurate representation of expenditures, to be applied as assessment work on the Tara, Hal, Dane and Mark Claims.


R.J. Cathro, Eng.



SWorn and subscribed to at
Whitehorse this 27 day of
February 1967.



Consulting Engineer
Whitehorse Yukon Territory.

Appendix II

STATEMENT OF COSTS

A. Airborne Geophysical Survey- 208 Line-miles(LM)

1. Helicopter rental- Okanagan Helicopters Ltd.		
-surveying lines	6:05	
-mobilization fuel ferry-	<u>1:58</u>	
Total	8:03 hrs.	@ \$450.00 \$3622.50
2. Crew accomodation @ avg. cost/LM		496.00
3. Prelim. plotting, interpretation @ \$3.00/LM		
plus drafting supplies		679.00
4. Air photos, mosaic preparation, maps		129.00
5. Management @ \$3.00/claim		840.00
6. " expenses- travel, office		292.50
7. Equipment rental- Lockwood		1550.00
8. Data reduction- Lockwood		<u>3002.00</u>

Sub-total \$10,611.00

B. Geological and Geochemical Survey

1. Transportation- G.N.A., C.P.A.- \$686.00		
Klondike-	<u>755.00</u>	
		1441.00
2. Camp rental & supplies mobilization		1694.00
3. Wages- 120 mandays		3017.00
4. Analysis- 579 samples @ \$1.95 plus freight . .		1160.00
5. Office expenses- drafting, blueprinting		844.00
6. Supervision, reports-		<u>1040.00</u>

Sub-total \$9,196.00

C. Linecutting

1. Transportation- G.N.A. & Klondike		560.00
2. Wages- 20 mandays @ \$15.00		300.00
3. Supervision		<u>100.00</u>

Sub-total \$960.00

Grand total \$20,767.00

APPENDIX III

PERSONNEL ENGAGED IN 1966 FIELD WORK

A. GEOPHYSICAL SURVEY

T.R. Gurr	pilot	Okanagan Helicopters, Vancouver
H. Sandau	operator	Lockwood Survey Corp., Toronto
D. Gamble	technician	Expl. Geophysics (Yukon) Ltd.
D. Smellie	geophysicist	" " " "
R. Cathro	geol. engineer	Archer, Cathro & Assoc. Ltd.

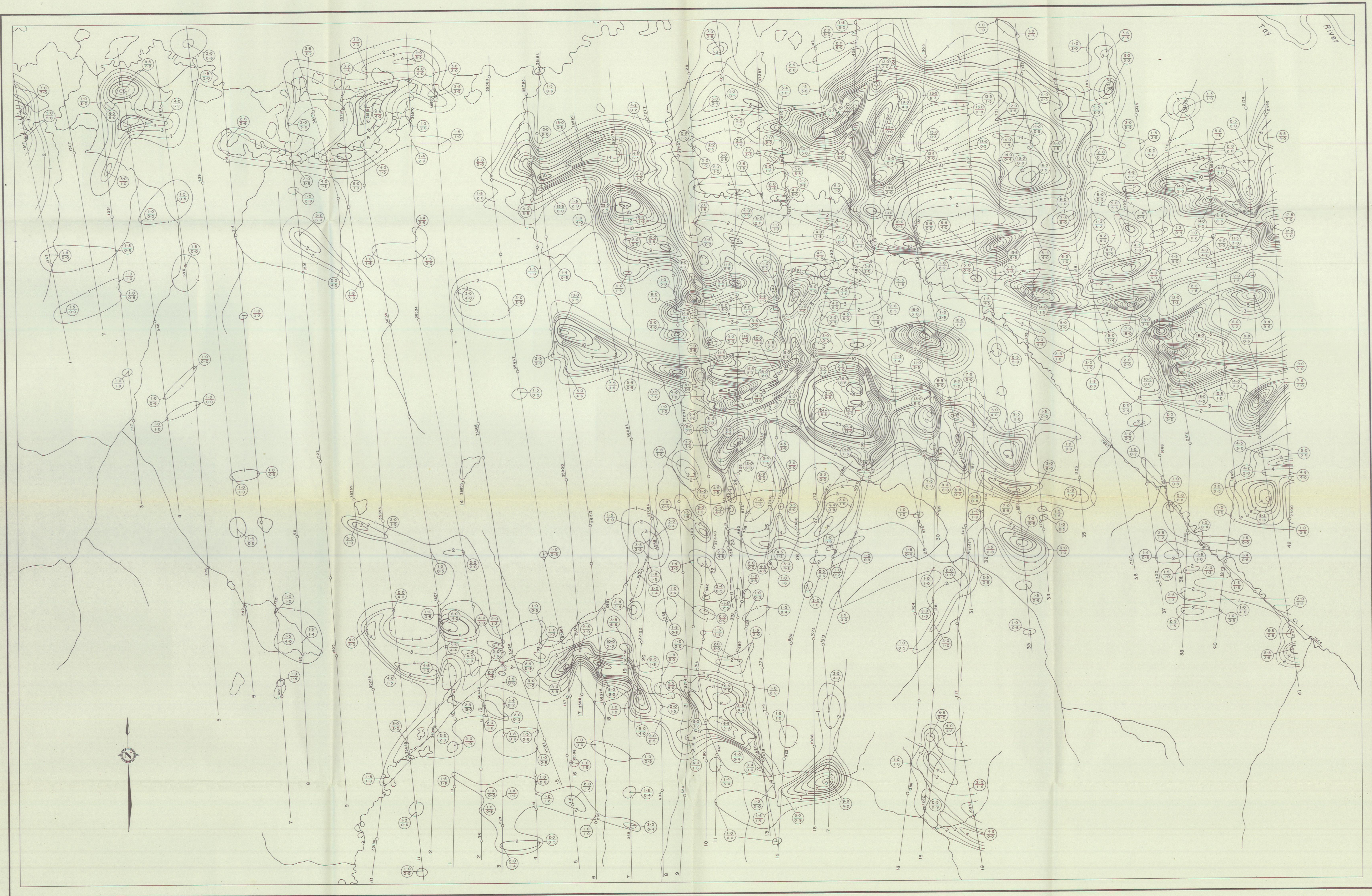
B. GEOLOGICAL AND GEOCHEMICAL SURVEY

F.M. Smith	student geologist	Archer, Cathro & Assoc. Ltd.
D.A. Lyman	" "	" " "
J. Litsenburger	" "	" " "
R. McGechaen	soil sampler	" " "
J. Dickson	" "	" " "
P. Turner	" "	" " "
B. Smaill	" "	" " "
J. McPherson	" "	" " "
R. VanVugt	" "	" " "
N. Pelletier	cook	" " "
M. Hommes	draftsman	" " "
R. Cathro	consulting eng.	" " "

C. LINECUTTING

J.J. O'Neill	linecutter	Ross River
A. Charlie	"	" "
A. McLeod	"	" "

YUKON COPPER LIMITED
AIRBORNE GEOPHYSICAL SURVEY



MEAN FLIGHT LINE SPACING 1000 FEET
 MEAN TERRAIN CLEARANCE 200 FEET
 ELECTROMAGNETIC CONTOURS 5, 10, 15 etc.
 1, 2, 3, 4 etc.
 NEGATIVE CONTOURS -5, -10 etc.
 -1, -2, -3, -4 etc.
 FIDUCIAL POINTS 3690
 FLIGHT LINES

The contours represent amplitude of in phase response of the resultant field expressed in parts per million of the primary. The figures $\frac{2.2}{0.2}$ represent amplitude in phase component quadrature component. The frequency of the primary current is 4000 cycles per second.

TARA, DANE, HAL AND MARK GROUPS
YUKON TERRITORY

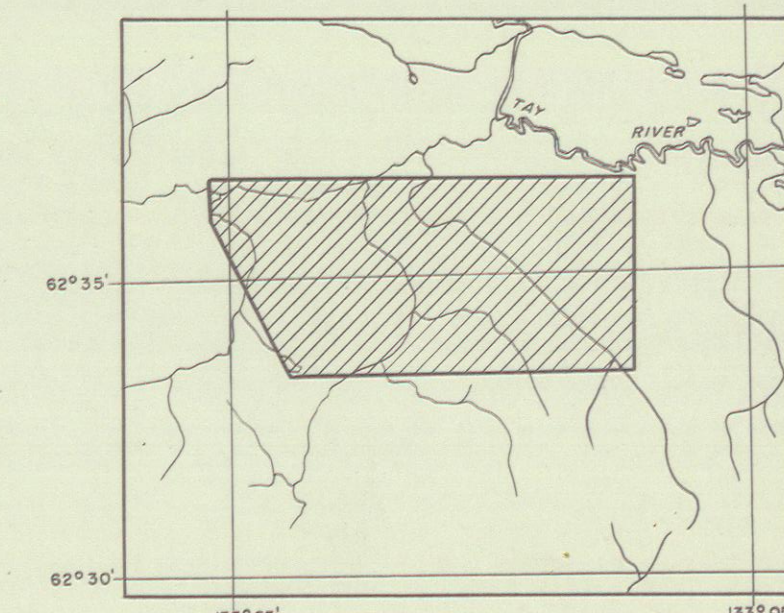
SCALE
 1000 0 1000 2000 3000 4000 5000
 FEET
 1 inch to 1320 Feet
 (Approx.)

ELECTROMAGNETIC MAP

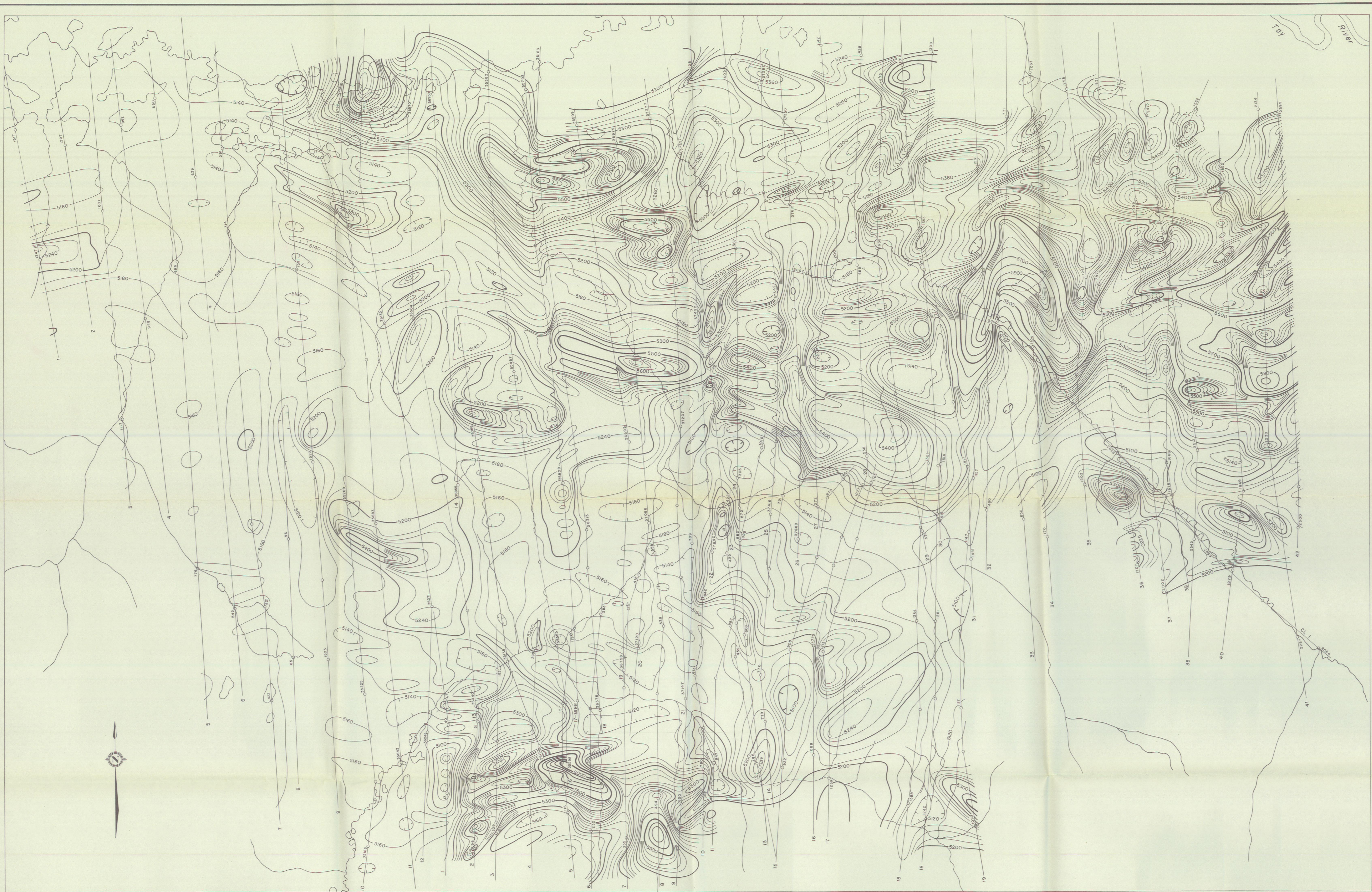
Flown and Compiled by
 LOCKWOOD SURVEY CORPORATION LIMITED
 TORONTO, CANADA

1966

#2

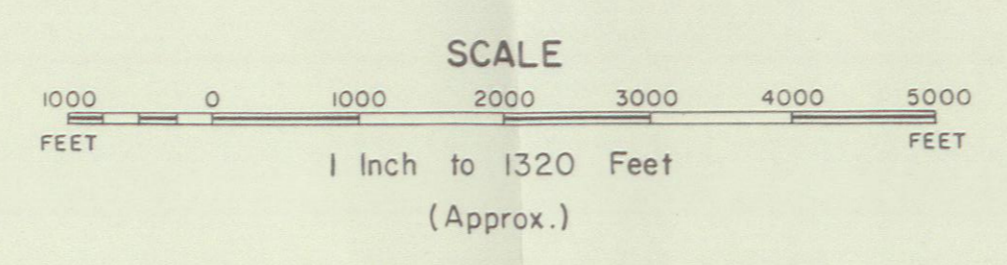


YUKON COPPER LIMITED
AIRBORNE GEOPHYSICAL SURVEY



- CONTOUR INTERVAL 20 GAMMA
- MEAN FLIGHT LINE SPACING 1000 FEET
- MEAN TERRAIN CLEARANCE 200 FEET
- 500 GAMMA CONTOUR
- 100 GAMMA CONTOUR
- 20 GAMMA CONTOUR
- MAGNETIC LOW
- FIDUCIAL POINTS O3690
- FLIGHT LINES

TARA, DANE, HAL AND MARK GROUPS
YUKON TERRITORY

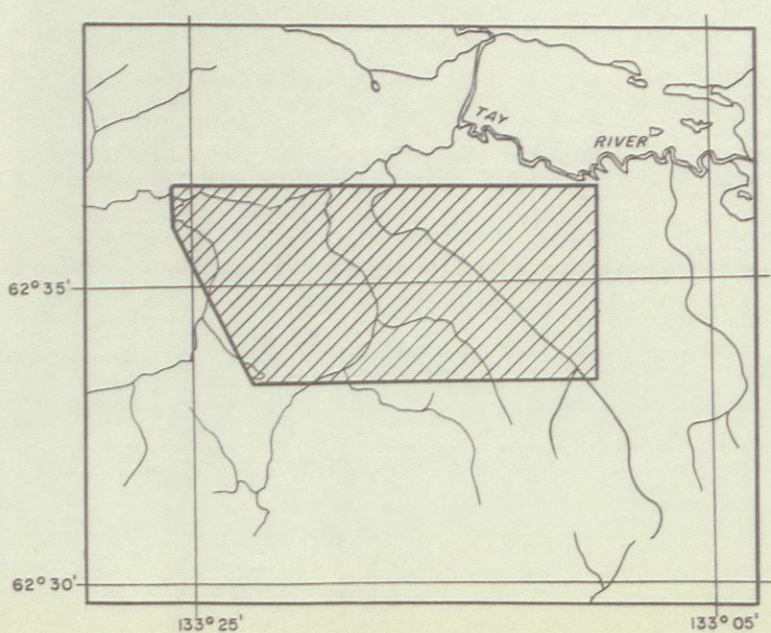


AEROMAGNETIC MAP

Flown and Compiled by
LOCKWOOD SURVEY CORPORATION LIMITED
TORONTO, CANADA

1966

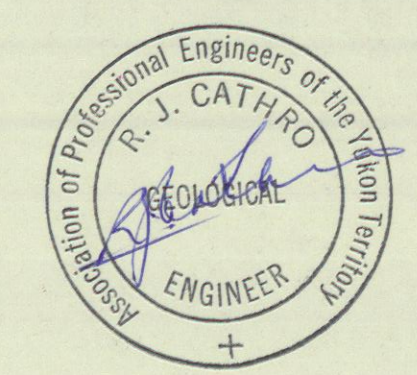
#3





ANVIL IVAN GROUP

- 50 - 99 PPM
- 100 - 199 PPM
- 200 PPM +
- x = Silt sample
- = Soil sample



GEOCHEMICAL SAMPLING
Copper PPM hot extraction

TARA, DANE, HAL, & MARK GROUP
 YUKON COPPER LTD.
 ANVIL DISTRICT YUKON

ARCHER & CATHRO
 Consulting Geologists

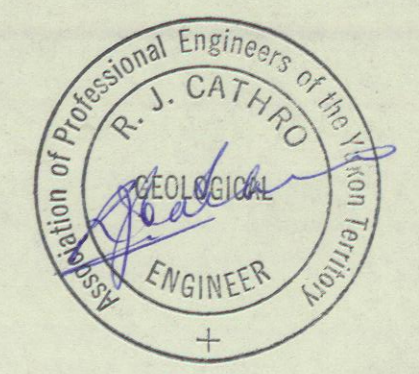
DATE	26 July 1966
DRAWN	R. J. Cathro
SCALE	Approx. 1" = 1/4 mile

DWG. No. **5.**



ANVIL IVAN GROUP

- 50 - 99 PPM
- 100 - 149 PPM
- 150 PPM +
- x = Silt sample
- = Soil sample



GEOCHEMICAL SAMPLING
Lead PPM hot extraction

TARA, DANE, HAL, & MARK GROUP
YUKON COPPER LTD.
ANVIL DISTRICT YUKON

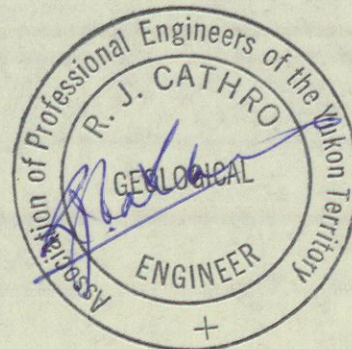
ARCHER & CATHRO
Consulting Geological Engineers

DATE	26 July 1966
DRAWN	R. J. Cathro
SCALE	Approx. 1" = 1/4 mile

DWG. No. **6.**



ANVIL IVAN GROUP



- 100 - 149 PPM
- 150 - 299 PPM
- 300 PPM +
- x = Silt sample
- . = Soil sample

GEOCHEMICAL SAMPLING
Zinc PPM hot extraction

TARA, DANE, HAL, & MARK GROUP
 YUKON COPPER LTD.
 ANVIL DISTRICT YUKON

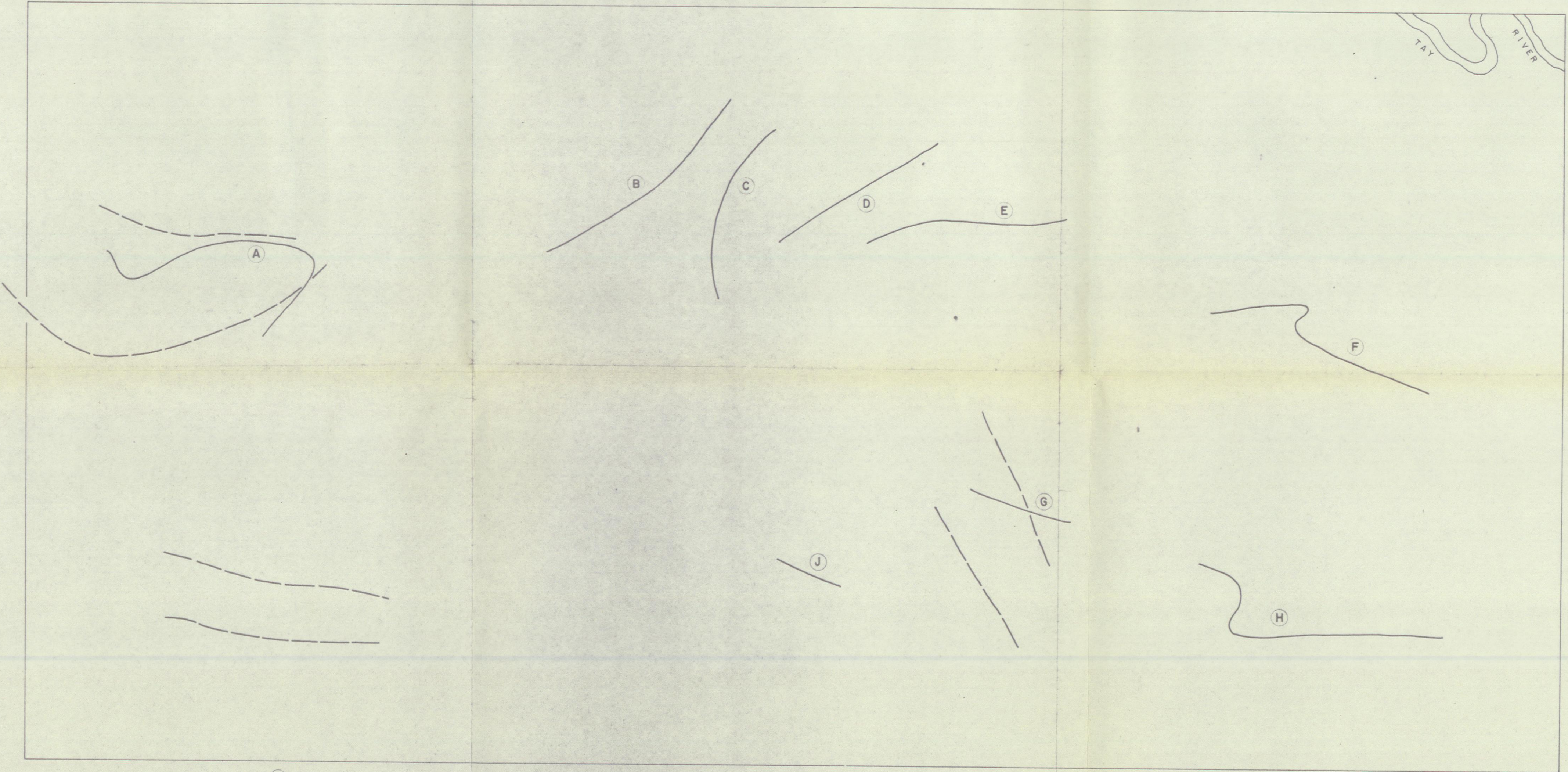
ARCHER & CATHRO
 Consulting Geologists

DATE: 26 July 1965
 DRAWN: R. J. Cathro
 SCALE: Approx. 1/24 mile

DWG No. 7

YUKON COPPER LIMITED

AIRBORNE GEOPHYSICAL INTERPRETATIONAL OVERLAY



ELECTROMAGNETIC ANOMALIES



APPROXIMATE MAGNETIC CONTACTS

N.E. PORTION TARA, DANE, HAL AND MARK GROUPS

DONALD W. SMELLIE, P. ENG.

#8