

# ARCHER, CATHRO & ASSOCIATES LTD.

CONSULTING GEOLOGICAL ENGINEERS

P.O. BOX 1051  
WHITEHORSE, YUKON

REPORT ON  
AIRBORNE GEOPHYSICAL SURVEY,  
GEOCHEMICAL SURVEY  
AND  
GEOLOGICAL SURVEY.

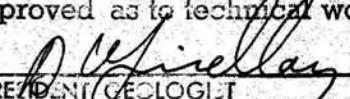
KO and RAGS CLAIM GROUPS  
PELLE RIVER VALLEY  
ANVIL- VANGORDA DISTRICT  
CLAIMS SHEETS 105-K-1 and K-2.

FOR


CITATION EXPLORATIONS LTD.

890 W. Pender St., Vancouver

This report has been examined by  
the Geological Evaluation Unit.  
Approved as to technical worth by:

  
RESIDENT GEOLOGIST

Approved as to cost in the amount  
of: \$ 12,289

  
RESIDENT MINING ENGINEER

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

R.J. Cathro, P. Eng.

June 1- Sept. 20, 1966

CORPORATED IN YUKON

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## INTRODUCTION

During 1966, a ground magnetometer survey, and a geological and geochemical reconnaissance survey were completed on the KO and RAGS claim groups, and an airborne geophysical survey was flown over the RAGS claims. These two groups are almost contiguous and are located on the northeast bank of Pelly River, directly across from Ross River Settlement, in claim sheets 105-K-1 and 105-K-2. They are owned by Citation Explorations Ltd.

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.

## LINECUTTING

Linecutting was contracted to Stan Burrell, of Whitehorse. Base line and some of the lines on the RAG claims were cut with a bulldozer, while the remainder were cut by hand. Figure 8 shows the location of the lines.

## GROUND MAGNETOMETER SURVEY

The survey was contracted to Huntec Ltd., and due mainly to the resignation of the operator from that company during the job, receipt of final maps, interpretation, and invoices has been delayed. An estimate for the cost of this survey has been made in Appendix II.

AIRBORNE GEOPHYSICAL SURVEY

A combined magnetometer (Mag) and electromagnetometer (EM) survey was conducted under contract by Lockwood Survey Corp. Ltd. on July 22, 1966. The equipment was mounted in a Bell 204 B turbine helicopter on charter from Okanagan Helicopters Ltd. Because the arrangements for this survey were made quickly and no airphotos of these claims could be obtained, it was necessary to follow bulldozer lines for control. For this reason only the RAGS claims were surveyed since the hand cut lines on the KO claims could not be seen from the air. A Total of 22 line-miles were flown.

The survey equipment consisted of a continuous-reading Gulf magnetometer and EM coils with a primary current of 400 cycles per second, which were mounted in a bird which was towed beneath the aircraft by a 100 foot long cable. A continuous strip photo record of the flight path was made. The aircraft was kept as close as possible to a mean terrain clearance of 200 feet by means of a radio altimeter and this was recorded on an APN tape. The mean terrain clearance of the bird was thus about 100 feet. The survey recording equipment and camera were mounted in the cabin of the helicopter and produced graphical tape records of the Mag, EM and elevation profiles.

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.

Final Mag and EM maps have just been received from Lockwood and are included with this report. However, Dr. Smellie's final interpretation is still awaited and his preliminary interpretation is included as Appendix IV. An estimate of the final airborne survey costs has been made for Appendix II.

The location of the flight lines on the preliminary maps was so indefinite that little use was made of them. The final maps disclose a sharp EM anomaly, with ratios between 1.5 and 2.0, on RAG claims 19 to 22, and strong magnetic relief in the northeast corner of the RAGS group. Since the area surveyed is relatively narrow, only a partial picture of the regional trend can be seen.

#### GEOLOGICAL AND GEOCHEMICAL SURVEY

The KO claims lie along the fairly steep flank of the Pelly valley immediately northwest of the junction of the Pelly and Ross Rivers. The RAGS claims are located on a flat upland, 1500 feet above the valley elevation. Overburden is thought to consist of a thin veneer of river gravel, ash and peat. Very little true outcrop was found although broken bedrock is common in the overburden and

a fairly reliable bedrock map was made in conjunction with the soil sampling. As shown on Figure 4, schists and phyllites are present. These rocks were mapped by the G.S.C. as being part of the Mississippian unit 7.

Soil samples were taken at 400 foot intervals along the bulldozed lines and at 500 foot intervals along the cut line which follows the baseline of the KO claim group. A total of 315 samples were collected and analyzed.

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 cases 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. Copper and zinc background were about normal for the district and very few anomalous

values were obtained. One high zinc reading was found on the KO 21 claim and it appears to be erratic because neither copper or lead were above background for the same sample. Lead values were uniformly low. A couple of moderately high, scattered copper values near the Mag anomaly are the only interesting geochem results.

#### CONCLUSIONS AND RECOMMENDATIONS

Prospecting and soil sampling results were not encouraging as the rocks on this hill appear to contain far less silica than those in the vicinity of the Faro and Vangorda deposits. No results from the ground Mag survey are yet available. The airborne geophysical survey over the RAGS claims disclosed a strong EM anomaly at the northwest end and an interesting magnetic area at the southeast end.

There is no magnetic response associated with the EM anomaly, although a 300 $\gamma$  anomaly is located immediately to the north. No outcrop was found in this area but from float found in overburden, it is presumed to be underlain by chlorite schist, perhaps containing minor magnetite. No graphite was noted. Prospecting was of a reconnaissance fashion only. Reconnaissance soil sampling showed only a couple of weakly anomalous values for copper and zinc.

The magnetic anomaly is probably caused by disseminated magnetite noted in the chlorite schist.

Geochemical and EM response was weak.

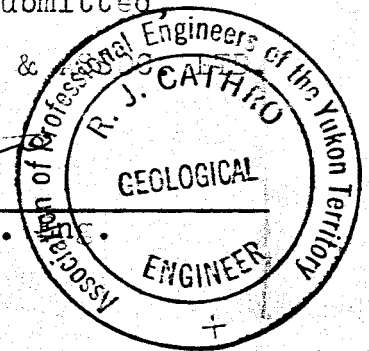
The only part of the claims definitely warranting further work at this stage is the EM anomaly found by the airborne survey. This property has lower priority than the Howard Lake or El Pino claims.

Respectfully submitted,

ARCHER, CATHRO &



R.J. Cathro, P.



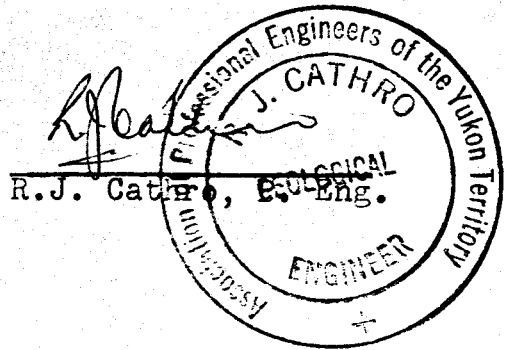
RJC:ps

## Appendix I

AFFIDAVIT

I, Robert J. Cathro, Consulting Geological Engineer, of Whitehorse, agent for Citation Explorations Ltd., 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 KO and RAGS Claim Groups.



Sworn and subscribed to at  
Whitehorse this 20 day of  
*December*, 1966.

Appendix II

STATEMENT OF COSTS

1. RAGS CLAIMS

A. Airborne Geophysical Survey- 22 line-miles

1. Helicopter rental	
-share of ferry Whitehorse to Ross River . . .	:04
-share of test flights . . . . .	:07
-plying lines & ferry from Ross River . . . . .	:35
Total . . . . .	:46
Cost @ \$450.00 . . . . .	\$345.00
2. Crew accomodation @ avg. cost of \$2.50/line-mile . . .	55.00
3. Preliminary plotting and interpretation @ \$2.25/	
line-mile plus drafting supplies and blueprinting . . . . .	55.00
4. Air photos, mosaic preparation, maps . . . . .	10.00
5. Management fees @ \$3.00 claim . . . . .	120.00
6. Management expenses- travel, office @ \$1.40/line-mile . . .	30.00
7. Estimated equipment rental- Lockwood @ \$10.00/line-mile . . .	220.00
8. Estimated data reduction- Lockwood @ \$20.00/line-mile . . .	440.00
9. Estimated final interpretation- Smellie @ \$1.00/line-mile . . .	22.00
Total . . . . .	\$1397.00

B. Geological and Geochemical Survey

$\frac{40}{72} = 56\%$

1. Maps, blueprinting, duplicating . . . . .	\$20.75
2. Transportation- G.N.A.- \$189.00	
Klondike- <u>243.00</u>	
	432.00
3. Camp rental, groceries, radio, mobilization, Archer and	
Cathro . . . . .	894.00
4. Wages- 48 man days- field, 2 man days- office A&C . . . . .	1190.00
5. Analysis- 315 samples @ \$1.95, plus freight, Atlas	
Testing Labs . . . . .	614.25
6. Supervision- Archer & Cathro . . . . .	375.00
7. Office expenses- drafting, typing, Archer & Cathro . . . . .	150.00
Total . . . . .	\$3676.00
RAGS portion- $\frac{40}{72}$ or 56%- . . . . .	2050.00

C. Linecutting

1. Base Line & Control Line- 25 hours bulldozing @ \$22.00	\$550.00
2. Linecutting- 26.7 miles @ \$80.00 . . . . .	2136.00
Total . . . . .	\$2686.00

D. Ground Magnetometer Survey- Hunttec Ltd.

$\frac{40}{72}$  or 56%

1. Estimated final billing- Hunttec . . . . .	\$3000.00
2. Transportation and camp costs- Stan Burrell . . . . .	<u>450.00</u>
Total . . . . .	\$3450.00
RAGS portion- $\frac{40}{72}$ or 56% . . . . .	<u>1930.00</u>
Grand Total . . . . .	\$8063.00
Rags Claims	

2. KO CLAIMS

A. Geological and Geochemical Survey

$\frac{32}{72}$  or 44% or total costs listed under RAGS claims . . . . \$1616.00

B. Linecutting

20.5 miles @ \$80.00 . . . . . \$1640.00

C. Ground Magnetometer Survey- Hunttec Ltd.

$\frac{32}{72}$  or 44 % of total estimated costs listed under RAGS  
Claims . . . . . \$1520.00

Grand Total KO Claims . . . . . \$4776.00

## Appendix III

PERSONNEL ENGAGED IN 1966 FIELD WORKA. Airborne Geophysical Survey

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

B. Geological and Geochemical Survey

J. Litsenburger	Student geologist	Archer, Cathro & Assoc. Ltd.
B. Smail	soil sampler	" " "
J. McPherson	" "	" " "
M. Hommes	draftsman	" " "
R. Cathro	geological engineer	" " "
A. Archer	" "	" " "

C. Linecutting

R. Russell	bulldozer operator	Sundre, Alberta.
S. Burrell	foreman	Whitehorse.
H. Alberator	Linecutter	Germany.
D. Saunders	"	Sundre.
L. Wright	"	Sundre.
W. Johnson	"	Whitehorse.
G. Kvill	"	Edmonton.
W. Koser	"	Ross River.
T. Dewhurst	"	Teslin.
G. Gordon	"	Whitehorse.

D. Ground Magnetometer Survey

M. Curry-	geophysical operator	Huntec Ltd.
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DONALD W. SMELLIE, P.ENG.  
CONSULTING GEOPHYSICIST

1008 WEST BROADWAY  
VANCOUVER 9, B.C.  
REGENT 1-0554

August 16th, 1966

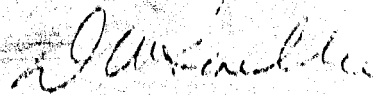
Citation Explorations Ltd. (N.P.L.),  
890 West Pender Street,  
Vancouver 1, B.C.

Gentlemen:

We have examined the magnetic and electromagnetic data from a helicopter-borne survey of this area performed by Lockwood Survey Corporation. The survey was flown during July 1966 and the final maps are expected at a later date. Final interpretation will involve a more detailed examination.

The survey showed a number of electromagnetic anomalies and a magnetic pattern of generally low relief. The preliminary examination of the data disclosed two fair quality electromagnetic conductors on the EL PINO group, one of which is located near the center of lines 6, 7 and 8 and the other near the center of line 14. Another fair quality electromagnetic conductor is indicated on the ORCHAY group on the north-central part of line 24. These anomalies merit ground electromagnetic and magnetic investigation. The data disclosed nothing on the KO and RAGS group to warrant first-priority ground examination.

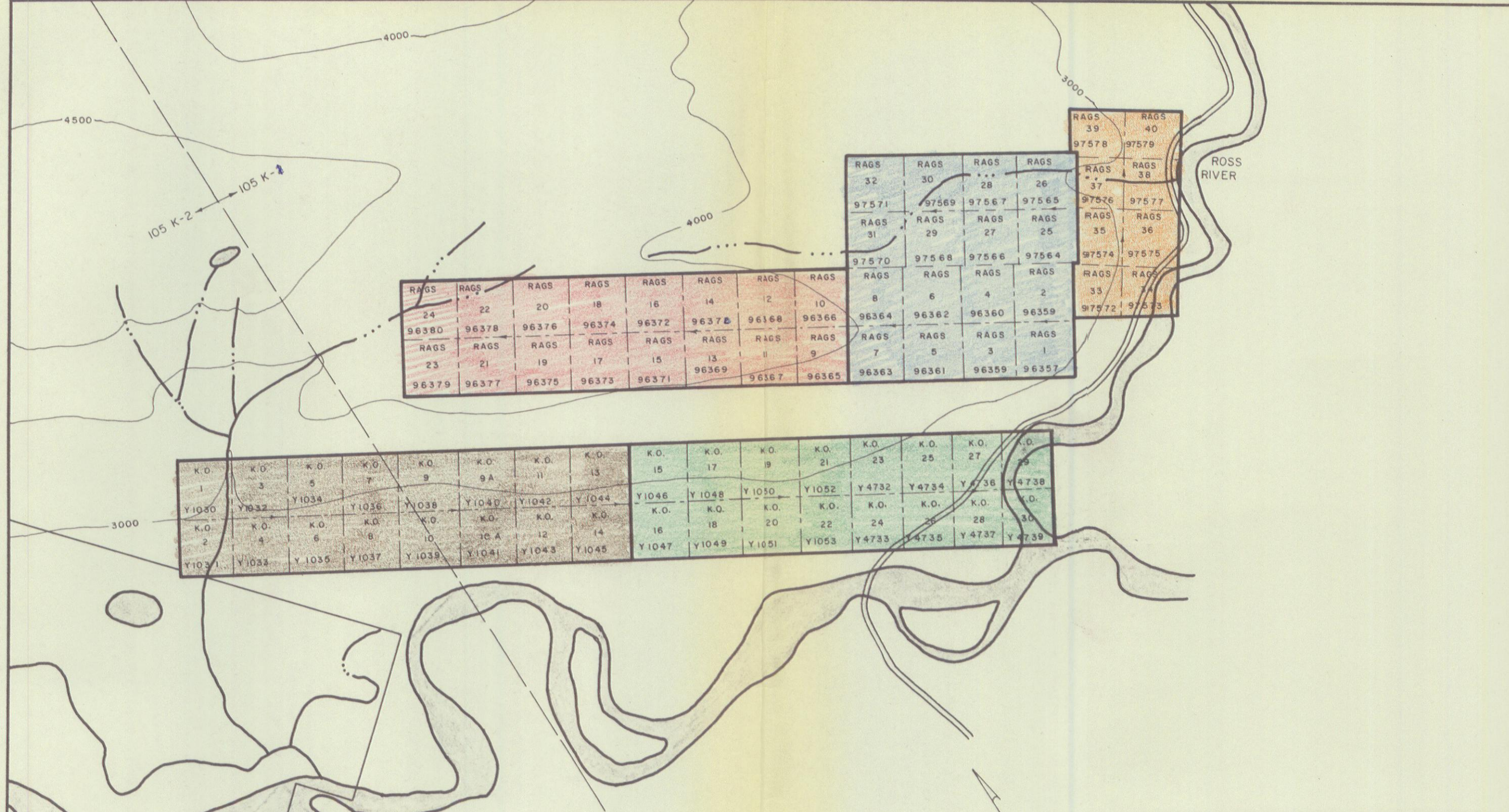
Yours very truly,



D. W. SMELLIE, P.Eng.

DWS:ds

c.c. - Archer & Cathro,  
P.O. Box 1051,  
Whitehorse, Y.T.



RAGS	RAGS	RAGS	RAGS	RAGS	RAGS	RAGS	RAGS
24	22	20	18	16	14	12	10
96380	96378	96376	96374	96372	96370	96368	96366
RAGS	RAGS	RAGS	RAGS	RAGS	RAGS	RAGS	RAGS
23	21	19	17	15	13	11	9
96379	96377	96375	96373	96371	96369	96367	96365

RAGS	RAGS	RAGS	RAGS
32	30	28	26
97571	97569	97567	97565
RAGS	RAGS	RAGS	RAGS
31	29	27	25
97570	97568	97566	97564
RAGS	RAGS	RAGS	RAGS
8	6	4	2
96364	96362	96360	96359
RAGS	RAGS	RAGS	RAGS
7	5	3	1
96363	96361	96359	96357

RAGS	RAGS
39	40
97578	97579
RAGS	RAGS
37	38
97576	97577
RAGS	RAGS
35	36
97574	97575
RAGS	RAGS
33	34
97572	97573

K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.
1	3	5	7	9	9A	11	13	15	17	19	21	23	25	27	29
Y1030	Y1032	Y1034	Y1036	Y1038	Y1040	Y1042	Y1044	Y1046	Y1048	Y1050	Y1052	Y4732	Y4734	Y4736	Y4738
K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.	K.O.
2	4	6	8	10	10A	12	14	16	18	20	22	24	26	28	30
Y1031	Y1033	Y1035	Y1037	Y1039	Y1041	Y1043	Y1045	Y1047	Y1049	Y1051	Y1053	Y4733	Y4735	Y4737	Y4739

NOTE: Change in claims and grant N<sup>o</sup>'s. caused by duplication of K.O. 9 & 10 Claims on the ground, and improper location of K.O. 25-36 On claim sheet.

*KEY MAP*  
*KO & RAGS CLAIMS*

**ARCHER & CATHRO**  
Consulting Geological Engineers

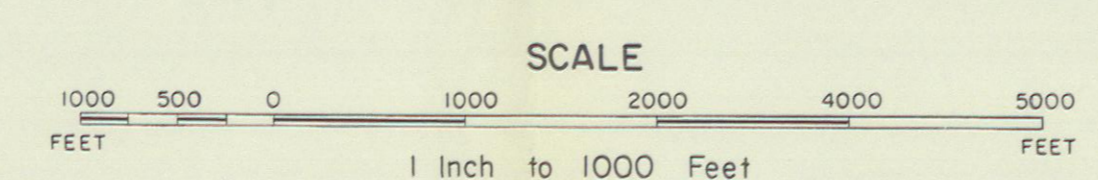
DATE	21 Dec. 1966	DWG. No. <i>1</i>
DRAWN	<i>M. Hommes</i>	
SCALE	1" = 1/2 mi.	

CITATION EXPLORATIONS LIMITED  
AIRBORNE GEOPHYSICAL SURVEY



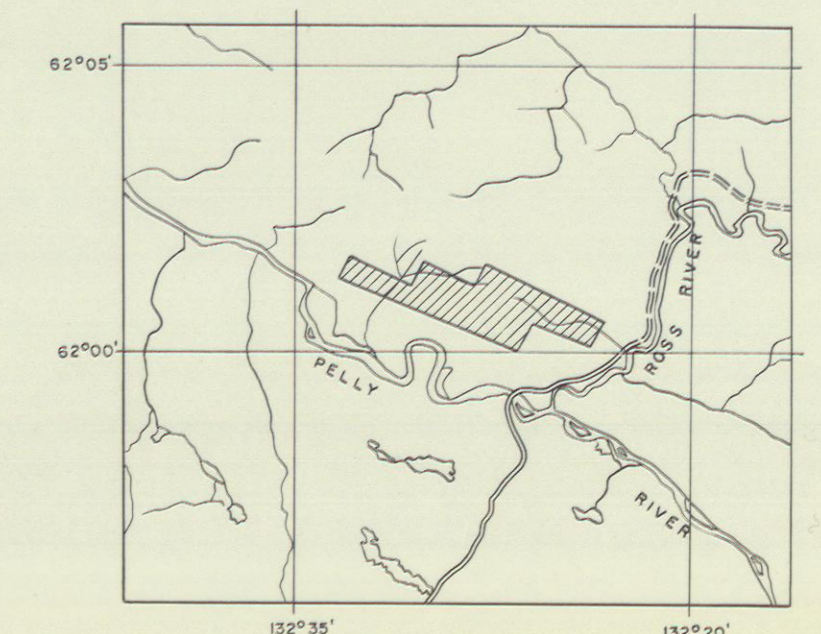
MEAN FLIGHT LINE SPACING ..... 1000 FEET  
 MEAN TERRAIN CLEARANCE ..... 200 FEET  
 ELECTROMAGNETIC CONTOURS 5, 10, 15 etc. ....  
 1, 2, 3, 4 etc. ....  
 NEGATIVE CONTOURS -5, -10 etc. ....  
 -1, -2, -3, -4 etc. ....  
 FIDUCIAL POINTS ..... 3690  
 FLIGHT LINES .....  
 The contours represent amplitude of in phase response of the resultant field expressed in parts per million of the primary.  
 The figures  $\frac{a}{b}$  represent amplitude in phase component quadrature component.  
 The frequency of the primary current is 4000 cycles per second.

K.O. AND RAGS GROUP  
YUKON TERRITORY

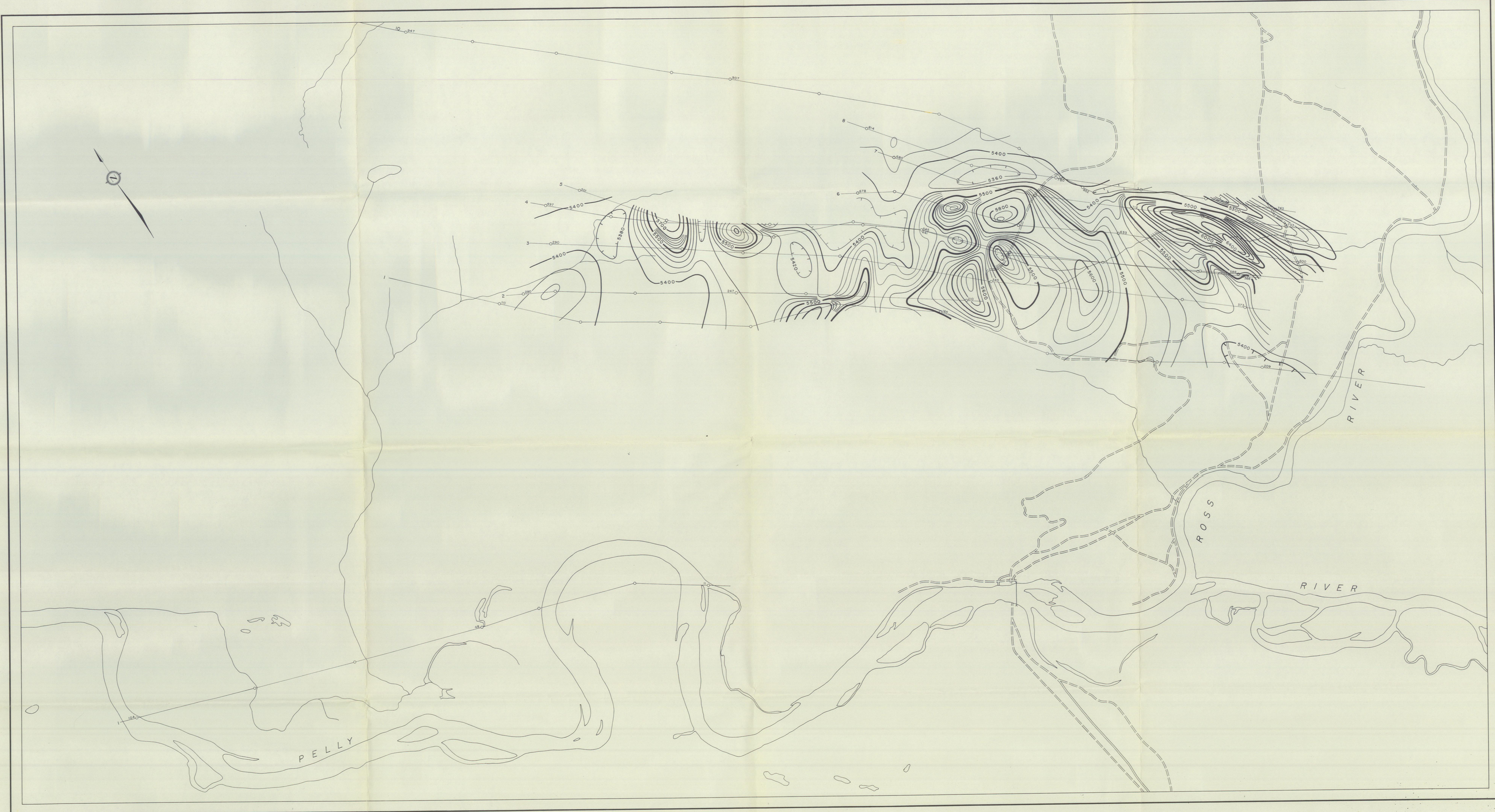





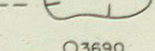
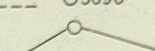

ELECTROMAGNETIC MAP

Flown and Compiled by  
LOCKWOOD SURVEY CORPORATION LIMITED  
TORONTO, CANADA  
1966

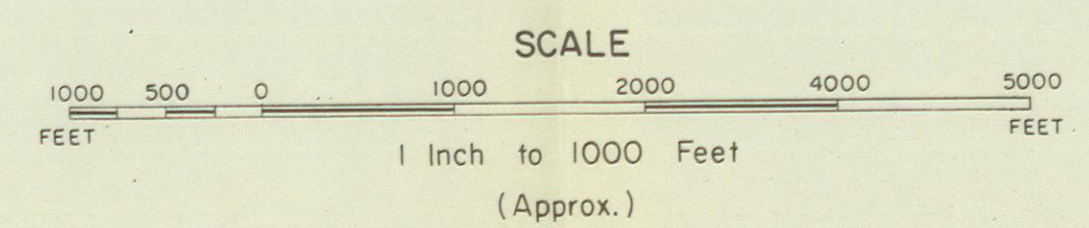


CITATION EXPLORATIONS LIMITED  
AIRBORNE GEOPHYSICAL SURVEY



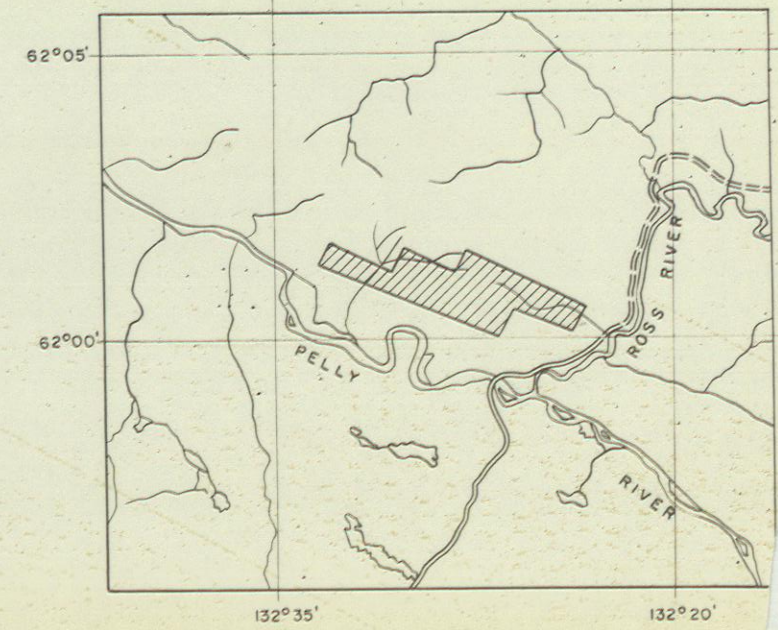
CONTOUR INTERVAL ..... 20 GAMMA  
 MEAN FLIGHT LINE SPACING ..... 1000 FEET  
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 500 GAMMA CONTOUR .....   
 100 GAMMA CONTOUR .....   
 20 GAMMA CONTOUR .....   
 MAGNETIC LOW .....   
 FIDUCIAL POINTS .....   
 FLIGHT LINES ..... 

K.O. AND RAGS GROUP  
YUKON TERRITORY



AEROMAGNETIC MAP

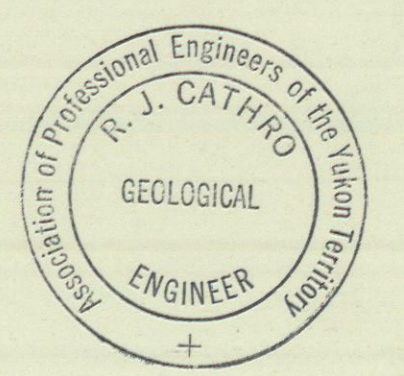
Flown and Compiled by  
 LOCKWOOD SURVEY CORPORATION LIMITED  
 TORONTO, CANADA  
 1966





**Legend**

- APPROXIMATE CLAIM BOUNDARY AS FOUND IN FIELD
- - - CLAIM BOUNDARY NOT SEEN, LOCATION FROM GOVERNMENT CLAIM SHEET
- - CHLORITIC SCHIST - SOME MAGNETITE
- - PHYLLITE
- - GREY - CHLORITIC SCHIST



GEOLOGY

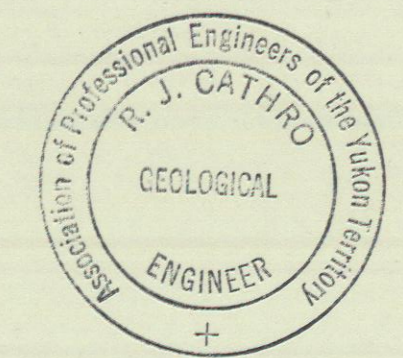
**KO & RAGS CLAIM GROUPS**  
 CITATION EXPLORATIONS LTD.  
 ROSS RIVER AREA, Y.T.

**ARCHER & CATHRO**  
 Consulting Geological Engineers

DATE	26 Aug. 1966	
DRAWN	<i>[Signature]</i>	
SCALE	1" = 1/4 mi.	DWG. 4



--- APPROXIMATE CLAIM BOUNDARY AS FOUND IN FIELD  
 - - - CLAIM BOUNDARY NOT SEEN, LOCATION FROM GOVERNMENT CLAIM SHEET  
 ● 50 - 99 PPM - WEAKLY ANOMALOUS  
 ● 100 - 199 PPM - MODERATELY ANOMALOUS  
 ● 200 PPM + - ANOMALOUS



**GEOCHEMICAL SAMPLING**  
 Copper PPM hot extraction

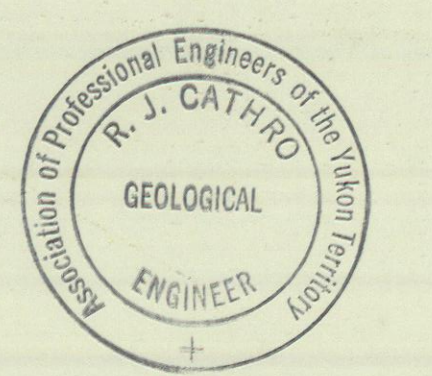
**KO & RAGS CLAIM GROUPS**  
 CITATION EXPLORATIONS LTD.  
 ROSS RIVER AREA, Y.T.

**ARCHER & CATHRO**  
 Consulting Geological Engineers

DATE	26 Aug. 1966	
DRAWN	<i>[Signature]</i>	DWG. 5.
SCALE	1" = 1/4 mi.	



- APPROXIMATE CLAIM BOUNDARY AS FOUND IN FIELD
- - - CLAIM BOUNDARY NOT SEEN, LOCATION FROM GOVERNMENT CLAIM SHEET
- 50 - 99 PPM - WEAKLY ANOMALOUS
- 100 - 149 PPM - MODERATELY ANOMALOUS
- 150 PPM + ANOMALOUS



GEOCHEMICAL SAMPLING  
Lead PPM hot extraction

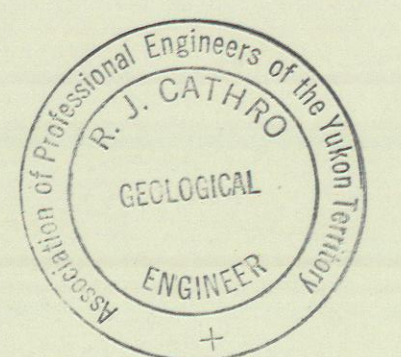
**KO & RAGS CLAIM GROUPS**  
CITATION EXPLORATIONS LTD.  
ROSS RIVER AREA, Y.T.

**ARCHER & CATHRO**  
Consulting Geological Engineers

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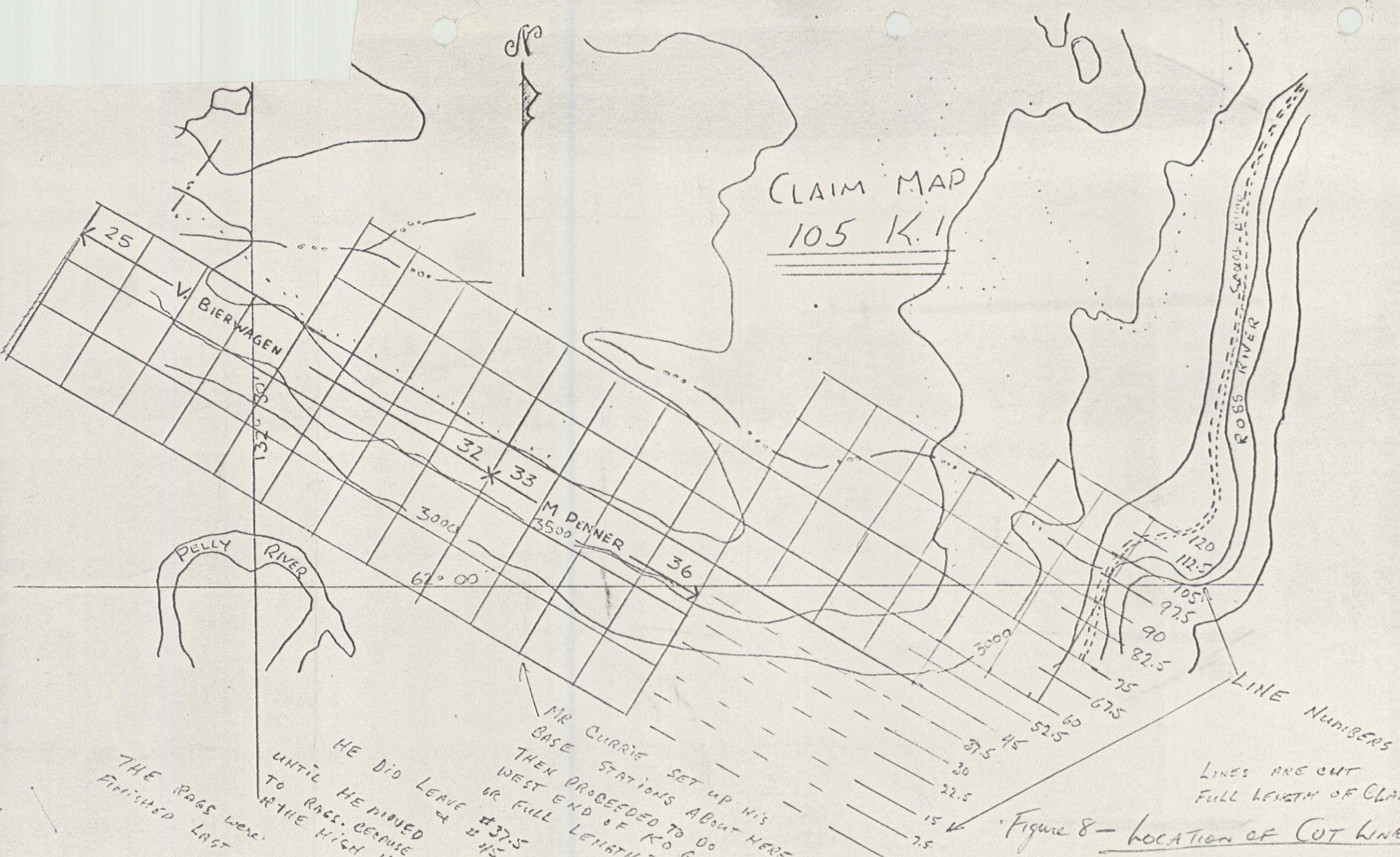


——— APPROXIMATE CLAIM BOUNDARY AS FOUND IN FIELD  
 - - - CLAIM BOUNDARY NOT SEEN, LOCATION FROM GOVERNMENT CLAIM SHEET  
 ● 100 - 149 PPM - WEAKLY ANOMALOUS  
 ○ 150 - 299 PPM - MODERATELY ANOMALOUS  
 ○ 300 PPM + ANOMALOUS



GEOCHEMICAL SAMPLING  
 Zinc PPM hot extraction  
**KO & RAGS CLAIM GROUPS**  
 CITATION EXPLORATIONS LTD.  
 ROSE RIVER AREA, Y.T.  
**ARCHER & CATHRO**  
 Consulting Geological Engineers  
 DATE 25 Aug 1966  
 DRAWN [Signature]  
 SCALE 1" = 1/4 mi. DWG. 7.

CLAIM MAP  
105 K. 1



MR CURRIE SET UP HIS  
BASE STATIONS ABOUT HERE  
THEN PROCEEDED TO GO  
WEST END OF KO GRD  
OR FULL LENGTH?  
HE DID LEAVE #37.5  
#45  
UNTIL HE HAD  
TO RAG. BECAUSE  
AT THE HIGH HILL  
THE RAGS WERE  
FINISHED LAST

Figure 8 - LOCATION OF CUT LINES  
LINES ARE CUT  
FULL LENGTH OF CLAIMS