GEOPHYSICAL REPORT ON AEROMAGNETIC SURVEY
ON THE
CAN, TIP, TIN, ROSS, GENE
GERRY, TOM, NORA, LIN
CLAIM GROUPS
IN THE
CANADIAN CREEK - EXCELSIOR CREEK AREA
YUKON TERRITORY
NOVEMBER - DECEMBER 1970

Staking Sheet: 115-J-15

Coordinates : 62°48' 138°46'

62°47' 138°57'

Written for: Acroll Oil & Gas Ltd.
660 Calgary Place One
330 - 5th Ave. S.W.
Calgary 1, Alberta

By: David G. Mark, B.Sc.
Geophysicist

Engineer: T. R. Tough, P.Eng.
Geologist

N T S - 115 J/15

CAN, TIP, TIN and ROSS Groups
GERRY, GENE, TOM, NORA and LIN Groups

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2. E. A. Dodd	
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CAN, TIP, TIN and ROSS Groups
GERRY, GENE, TOM, NORA and LIN Groups

SUMMARY

An aeromagnetic survey was carried out by GEOTRONICS SURVEYS LTD. over claims held by Acroll Oil & Gas Ltd. in the Canadian Creek - Excelsior Creek area of the Yukon Territory in the latter part of November into the early part of December, 1970. The object was to map lithological contacts as well as fault and shear zones.

The property consists of 2 groups of claims, referred to in the report as the east and west groups. The east group straddles Canadian Creek and is largely within metamorphic rocks of igneous origin and the west group straddles the west fork of Excelsior Creek and is wholly within the acid intrusive, probably granodiorite.

The survey verified the contact between the 2 rock types, perhaps plotting it more accurately. The survey, however, failed to reflect any structure.

It is recommended, as the next best step in exploration of the property, to soil sample followed by an induced polarization survey, if warranted. Prospecting and geological mapping should also be undertaken.

GEOPHYSICAL REPORT ON AEROMAGNETIC SURVEY ON CLAIMS OF ACROLL OIL & GAS LTD. CANADIAN CREEK AREA WHITEHORSE M.D., YUKON

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Written for: Acroll Oil & Gas Ltd.
660 Calgary Placde One
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INTRODUCTION

An aeromagnetic survey was carried out over claims held by Acroll in the southern Yukon under supervision of the writer and under technical supervision of E. A. Dodd. The claim groups covered are the CAN, TIP, TIN and ROSS Groups, hereinafter called the west group and the GERRY, GENE, TOM, NORA and LIN Groups, hereinafter called the east group. The survey was carried out from the latter part of November into early December, 1970.

The 176 million ton deposit of Casino Silver is found within the Mesozoic acidic intrusives. Much of Acroll's property is also found on this rock and also metamorphic rock of Paleozoic Age. The object of the survey was, therefore, to map petrological contacts and possibly structures such as

faults and shear zones. The area is covered by government aeromagnetic surveys, but at a terrain clearance of 1,000 feet. A survey flown at a lower elevation will give better detail and sometimes a much different picture.

THE PROPERTIES

The survey covered the following claims:

THE EAST GROUP

Group Name	Claim Name	Record Number
GENE	CAN 1-8	Y47749-56
GERRY	CAN 1-8	Y48876-83
	NORA 1-8	Y48868-75
TOM	NORA 17-24	Y51749-56
LIN	LIN 1-8	Y47346-53
	LIN 1-8	Y47357-64
NORA	NORA 1-8	Y47354-61
	NORA 1-8	Y47362-69

THE WEST GROUP

CAN	CAN 1-2	Y48884-85
	CAN 1-8	Y48886-93
	CAN 1-6	Y48894-99
TIP	TIP 1-2	Y48836-37
	TIP 1-8	Y48838-45
	CAN 1-2	Y48902-03
	CAN 7-8	Y48900-01
TIN	TIN 1-10, 12, 14	Y48848-57, 59, 61
	CAN 3-6	Y48904-07
ROSS	TIN 11, 13, 15, 16	Y48858, 60, 62, 63
	TIN 17-21, 23, 24	Y48910-16
	CAN 7-8	Y48908-09

LOCATION AND ACCESS

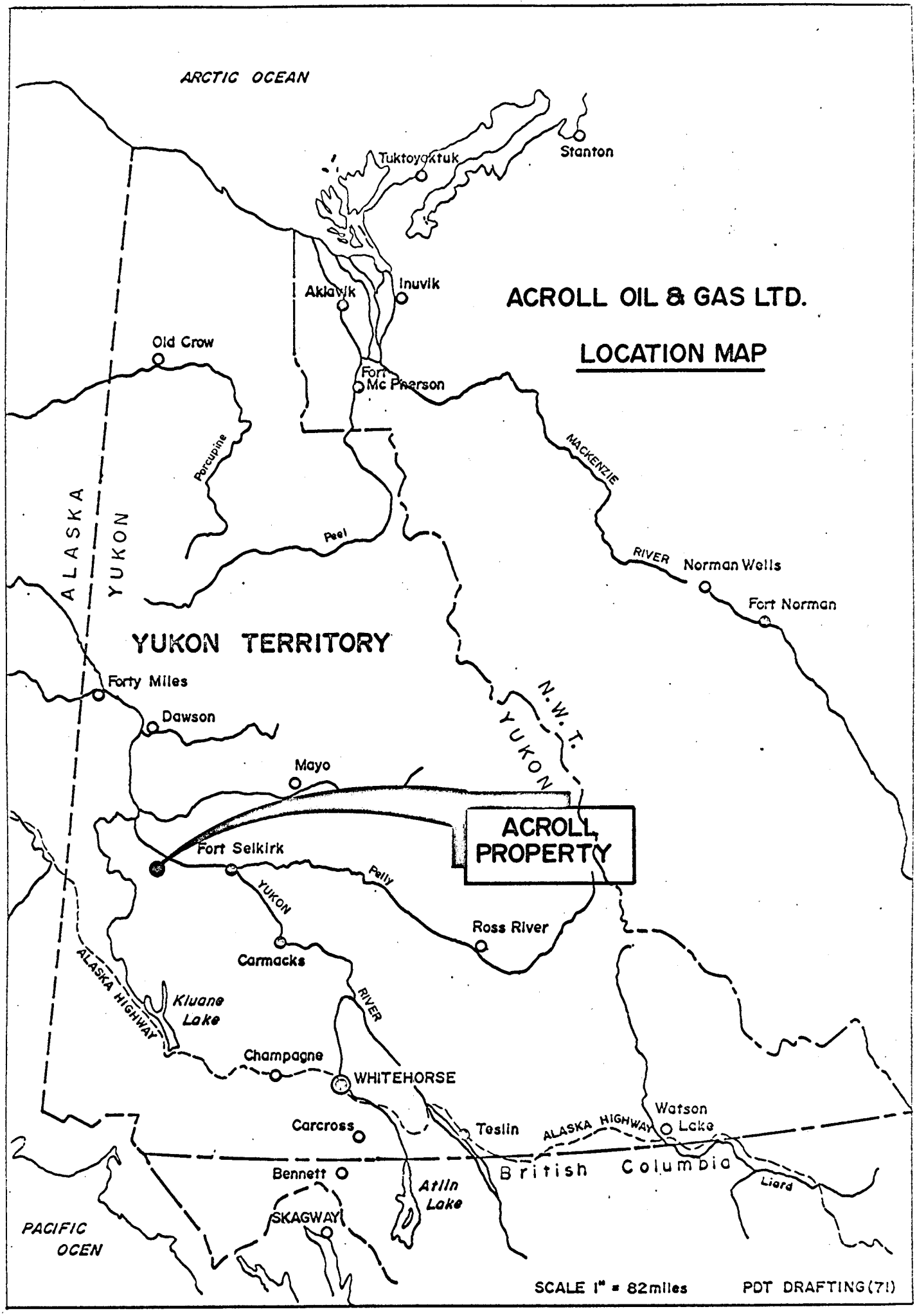
The east and west groups are located approximately 188 miles NW of Whitehorse, Yukon within the Whitehorse Mining District. The east group centers approximately 3.5 miles N30E of the Casino orebody and straddles Canadian Creek. The west group centers approximately 4.5 miles N70W of the orebody straddling the west fork of Excelsior Creek. The coordinates of the east group are 62°48' latitude and 138°46' longitude and that of the west group, 62°47' latitude and 138°57' longitude.

Access is probably best by helicopter to the claims themselves. However, a 4-wheel drive road from the Yukon River to the Casino property was recently constructed. Also, an airstrip for light planes is located just south of the Casino property.

TOPOGRAPHY

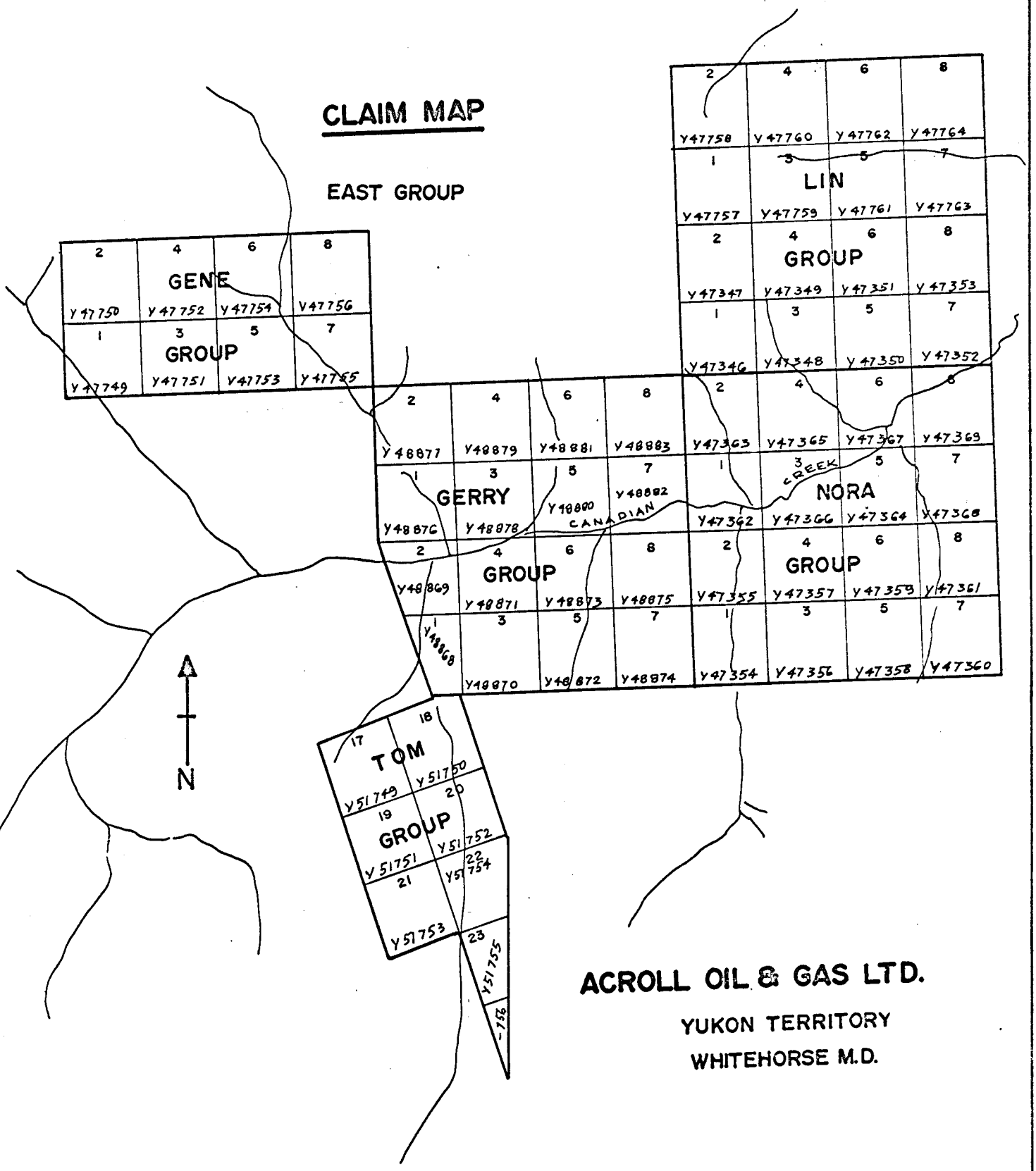
The claims are located within the mountainous belt known as the Dawson Range. The area is fairly rugged being cut thoroughly by ravines with creeks. Hilltops are rounded. Elevation of the survey area varies from 2,000 to 4,800 feet above sea level.

The ravines and river beds are wooded and the hilltops are barren.


ARCTIC OCEAN
Tuktoyaktuk
Stanton
Aklavik
Inuvik
ACROLL OIL & GAS LTD.
LOCATION MAP
Old Crow
Fort Mc Pherson
Porcupine
Peel
MACKENZIE
RIVER
Norman Wells
Fort Norman
ALASKA
YUKON
YUKON TERRITORY
Forty Miles
Dawson
N.W.T.
YUKON
Mayo
ACROLL PROPERTY
Fort Selkirk
YUKON
Pelly
Ross River
Carmacks
ALASKA HIGHWAY
Kluane Lake
RIVER
Champagne
WHITEHORSE
Carcross
Teslin
ALASKA HIGHWAY
Watson Lake
Bennett
British Columbia
Liard
Atlin Lake
SKAGWAY
PACIFIC OCEN
SCALE 1" = 82miles
PDT DRAFTING(71)

CLAIM MAP

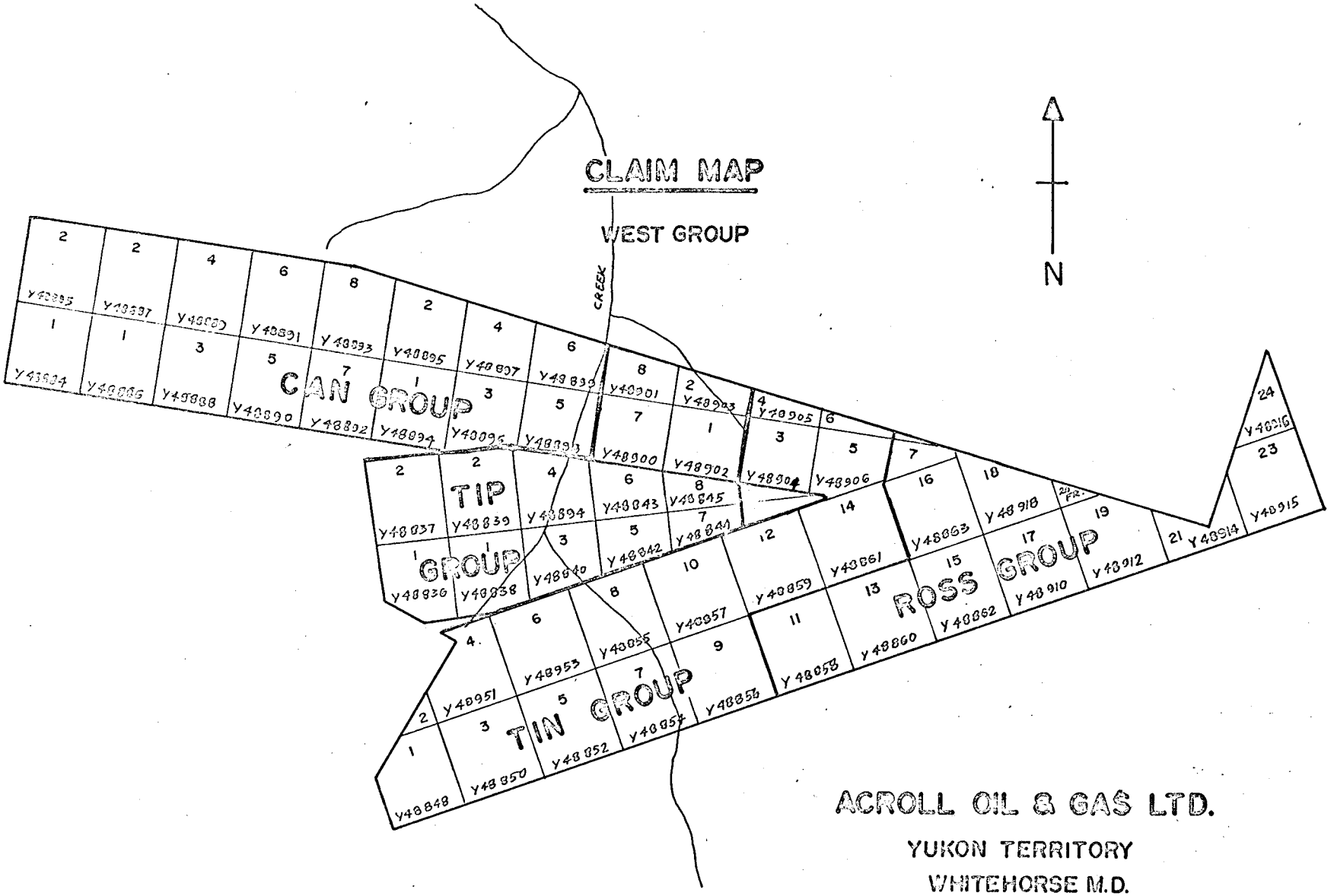
EAST GROUP



ACROLL OIL & GAS LTD.

YUKON TERRITORY

WHITEHORSE M.D.


CLAIM MAP
WEST GROUP
N
CREEK
CAN GROUP
TIP GROUP
TIN GROUP
ROSS GROUP
ACROLL OIL & GAS LTD.
YUKON TERRITORY
WHITEHORSE M.D.
SCALE 1"= 2640'

SURVEY PROCEDURE

The equipment was installed and test flown in a Cessna 180 fixed-wing over several days previous to the survey at the Whitehorse Airport. The plane was then flown to and based at the Casino airstrip during the survey period.

Survey lines ran east-west at 500-foot intervals. The instrument was set at a 1-second response time, giving, with an average air speed of 100 mph, readings approximately every 150 feet on the ground. Terrain clearance was attempted to be kept at 500 feet, but varied due to the rough topography (which also caused variations in the air speed). Data was controlled by topographical points such as creeks and roads and photographs were taken at these points.

It should be noted here that since the contacts and major structure run in approximately an east-west direction, the survey lines should have been run north and south. This would, therefore, necessitate the use of a helicopter because of the greater topographical variation. However, because of the extreme cold of -30 to -40°F., a helicopter could not be used. Therefore, the lines had to be run east-west.

INSTRUMENTATION

The data was detected using an ELSEC nuclear free precession magnetometer, Type 592. This measures the absolute value of the earth's magnetic field intensity. The sensitivity is 1 gamma and the absolute calibration is governed by a crystal-controlled oscillator so that it cannot drift.

Data was recorded analog on a Bausch and Lomb 6" strip chart recorder.

MAP PLOTTING

The data was taken off the strip chart at equal intervals and plotted on Sheet 1, scale 1" = 1,000 feet, with flight lines topography and claims. This data is contoured on an overlay, Sheet 2, of the same scale and with contour interval of 200 gammas.

GEOLOGY

This part is taken from Cairnes (1916) and MacKenzie (1970).

The east group is covered by metamorphic rocks of igneous origin of Paleozoic Age. MacKenzie labels rocks within this area, granites, ortho-granites, and mica, chlorite and amphibole schists. Cairnes has labelled the rocks north of Canadian Creek gneisses of granitic origin. MacKenzie has photo-interpreted over the east group, linears in varied directions that could be faults, shear zones, or such structure.

The west group is within the acid intrusive, perhaps granodiorite, of Mesozoic Age. This is the rock type of the Casino orebody. MacKenzie photo-interpreted a northwest trending fault through the center of the group and other linears trending north-northwest.

It appears that most, or all, of the economic minerals in the area occur within the Mesozoic granodiorite intrusive. Casino Silver, in the mid-sixties did work on 2 silver-lead-zinc vein-type showings, known as the Bomber and Helicopter, located west of the upper reaches of Casino Creek. These occurred in wide shear zones in altered granodiorite. In the late sixties, Casino Silver outlined the presently well-known, low-grade copper-molybdenum orebody of 176 million tons. This also occurs within granodiorite cut by faults and shear zones.

INTERPRETATION

The overall magnetic relief in the survey area is 9,450 gammas varying from a minimum of 2,550 gammas in the top part to a maximum of 12,000 gammas in the bottom part. This is relatively high, and is due to, as is discussed later, to the acidic intrusives and the metamorphics.

Upon looking at the contour map, the one outstanding feature is the closely contoured values on the bottom part of the map compared to the top part. The 2 areas seem to be separated by the 3,400-gamma contour line. North of this line is the metamorphics of igneous origin and south of the line is the acid intrusives, usually granodiorite and granite. The lithological contact is shown by a heavy solid line.

Just east of Canadian Creek, the contact is shown to be in either of 2 places. The 3,400-gamma contour line indicates the upper one and Cairnes and the G.S.C. aeromagnetic map (4319 G) indicate the lower one. The difference is

certainly not due to instrument error because of the number of flight lines the area in question covers. It could perhaps be due to a thin cover of the metamorphic rock and/or overburden, so that at a lower terrain clearance, the magnetics reflect the underlying intrusive much better.

Over the metamorphics, the background is approximately 3,000 gammas and magnetic relief is 950 gammas, a low value typical of this type of metamorphic rock. There is a slight ridge-type high trending east-west through the middle of the LIN Group. It could be due to a dyke, but now metamorphosed like the rock around it. However, it is of little interest.

The background over the acid intrusives is difficult to give but appears to be approximately 4,000 to 5,000 gammas. This area has a high magnetic relief, from 3,400 to 12,000 gammas, a difference of 8,600 gammas. This indicates a higher than average magnetite content in varying amounts throughout the intrusive. This would account for the various anomalies. Interestingly enough, it appears that the Casino deposit is directly associated with a magnetic anomalous high.

CONCLUSIONS

It appears, unfortunately, that the survey under discussion has given little information over that already known from the G.S.C. aeromagnetic map. It was hoped that it would indicate any faults or shear zones that might occur.

It is, therefore, doubtful that a ground magnetic survey would be of much greater use. It is in the writer's opinion

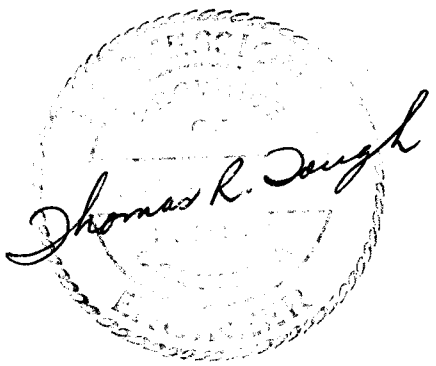
that a geochemistry program should next be considered, followed by induced polarization, if warranted. As is recommended by MacKenzie, the claims area should also be thoroughly prospected and geologically mapped.

Respectfully submitted,

GEOTRONICS SURVEYS LTD.

DAVID G. MARK, B.Sc.
Geophysicist

DGM:ly
January 7, 1971



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Cairnes, D. D. (1916): Geology Map - Klotassin, Yukon Territory; Geological Survey of Canada, Publication No. 1702.

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Department of Energy, Mines & Resources, Ottawa (1967): Airborne Magnetic Map - Colorado Creek, Yukon Territory; Geophysics Paper 4318 G.

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RESUME OF TECHNICAL AND FIELD EXPERIENCE

OF

DAVID MARK, B.Sc.

EDUCATION

Graduate of the University of British Columbia in Science (B.Sc.) in Geophysics.

EXPERIENCE IN INDUSTRY

1. Prospecting and geological evaluation for New Taku Mines Ltd. during exploration season of 1965.

2. Field supervisor for geophysical and geochemical work and prospecting for Mastadon-Highland Bell Mines Ltd. during exploration season of 1966.

3. Field supervisor in geochemical work and geological mapping for Anaconda (Canada) Company during exploration season of 1967.

4. Field geophysicist for Geo-X Surveys Ltd. during exploration season of 1968.

5. Presently geophysicist for Geotronics Surveys Ltd., Vancouver, B. C.

6. Experience in various geophysical instrument surveys: magnetometer, electromagnetic, self-potential, gravity, induced polarization, resistivity and seismic methods.

7. Member of the British Columbia Geophysical Society and the Vancouver Branch of The Canadian Institute of Mining and Metallurgy.

8. P. Eng. applied for with the Association of Professional Engineers of B. C.

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RESUME OF TECHNICAL AND FIELD EXPERIENCE OF E. A. DODD

1. Presently Field Manager for Trans-Arctic Explorations Ltd.

2. Three years of applied field experience in various aspects of geophysical surveying, prospecting, blasting, sampling and geochemistry.

3. Two years contracting experience in geophysics, property management, expediting and property evaluation.

4. Instrument operator on ground and airborne magnetic surveys, Ronka EM-16, Sabre Magnetometer, Geotronics G-100 Magnetometer, Sharpe MF-1 Magnetometer, Sharpe Ground Scintillometer, Worden Gravity Meter, Self Potential, Crone J.E.M. Shootback E.M., Sharpe Horizontal Loop E.M. and Induced Polarization.

5. Workable knowledge of placer gold properties.

6. Field Supervisor for Geotronics Surveys Ltd. since November 1, 1969 and presently employed by same.

7. Above mentioned experience applied in Idaho, Montana, Nevada, British Columbia but primarily in the Arctic region of the Northwest Territories and Yukon Territory.

8. Specializing in exploration in the western and eastern Arctic regions of Canada.

LEGEND

- PHOTO POINT
- SURVEY LINE
- CREEK
- CLAIM GROUP BOUNDARY

TO ACCOMPANY GEOPHYSICAL REPORT BY D.G.MARK, B.Sc.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — T. R. TOUGH

ACROLL OIL & GAS LTD.

CANADIAN CREEK AREA

YUKON TERRITORY, WHITEHORSE M.D.

AEROMAGNETIC SURVEY

type of survey

FLIGHT-LINES & CLAIM LOCATION PLAN

scale	date	job no.	sheet no.	drawn by
1" = 1000'	JAN. 1971	70-74	1	P.P.

Geotronics Surveys Ltd.

Geophysical Surveys, Ground & Airborne

517 - 602 West Hastings Street, Vancouver, British Columbia.

NTS - 115 J/15

TO ACCOMPANY GEOPHYSICAL REPORT BY D.G. MARK, B.Sc.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — T. R. TOUGH

ACROLL OIL & GAS LTD.

CANADIAN CREEK AREA

YUKON TERRITORY, WHITEHORSE M.D.

type of survey: AEROMAGNETIC SURVEY

CONTOUR MAP

scale	date	job no.	sheet no.	drawn by
1" = 1000'	JAN. 1971	70-74	2	P.P.

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