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ASSESSMENT REPORT

GEOCHEMICAL SAMPLING

**BEAR 1-56 (YA77973-78028) and CUB 1-24 (YA85539-85562)**  
Mineral Claims

**091842**

Vesuvius Hill Area  
NTS 105-D-6 and D-3  
Whitehorse Mining District

Latitude: 60°16' North  
Longitude: 135°16' West

By:  
RONALD C. R. ROBERTSON, F.G.A.C.

May 1986

**091842**

This report has been examined by  
the Geological Evaluation Unit  
under Section 53 (4) Yukon Quartz  
Mining Act and is allowed as  
representation work in the amount  
of \$ 8,400.00.

*for* *D. A. Edmond*  
Regional Manager, Exploration and  
Geological Services for Commissioner,  
of Yukon Territory.

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## INTRODUCTION

This report describes preliminary exploration carried out on a portion of the BEAR claim group, Vesuvius Hill, by a field crew employed by G. Macdonald and Associates on behalf of Shakwak Exploration Company Limited.

The initial period of this program, from 7th to 27th July 1985, involved grid establishment, reconnaissance prospecting and geological mapping, as well as an extensive program of soil and rock geochemical sampling.

## PROPERTY

The Vesuvius Hill property, located in the Wheaton River district of southern Yukon (Figure 1), consists of 80 mineral claims staked under the Yukon Quartz Mining Act and recorded in the office of the Whitehorse District Mining Recorder:

<u>Claim</u>	<u>Grant Number</u>	<u>Recording Date</u>
BEAR 1-56	YA77973-78028	28 July 1983
CUB 1-24	YA85539-85562	5 October 1984

The BEAR claims are recorded in the name of Agip Canada Ltd. and the CUB claims are recorded in the name of Shakwak Exploration Company Limited. Both properties are subject to an option agreement between Agip and Shakwak.

The claim distribution is shown in Figure 2.

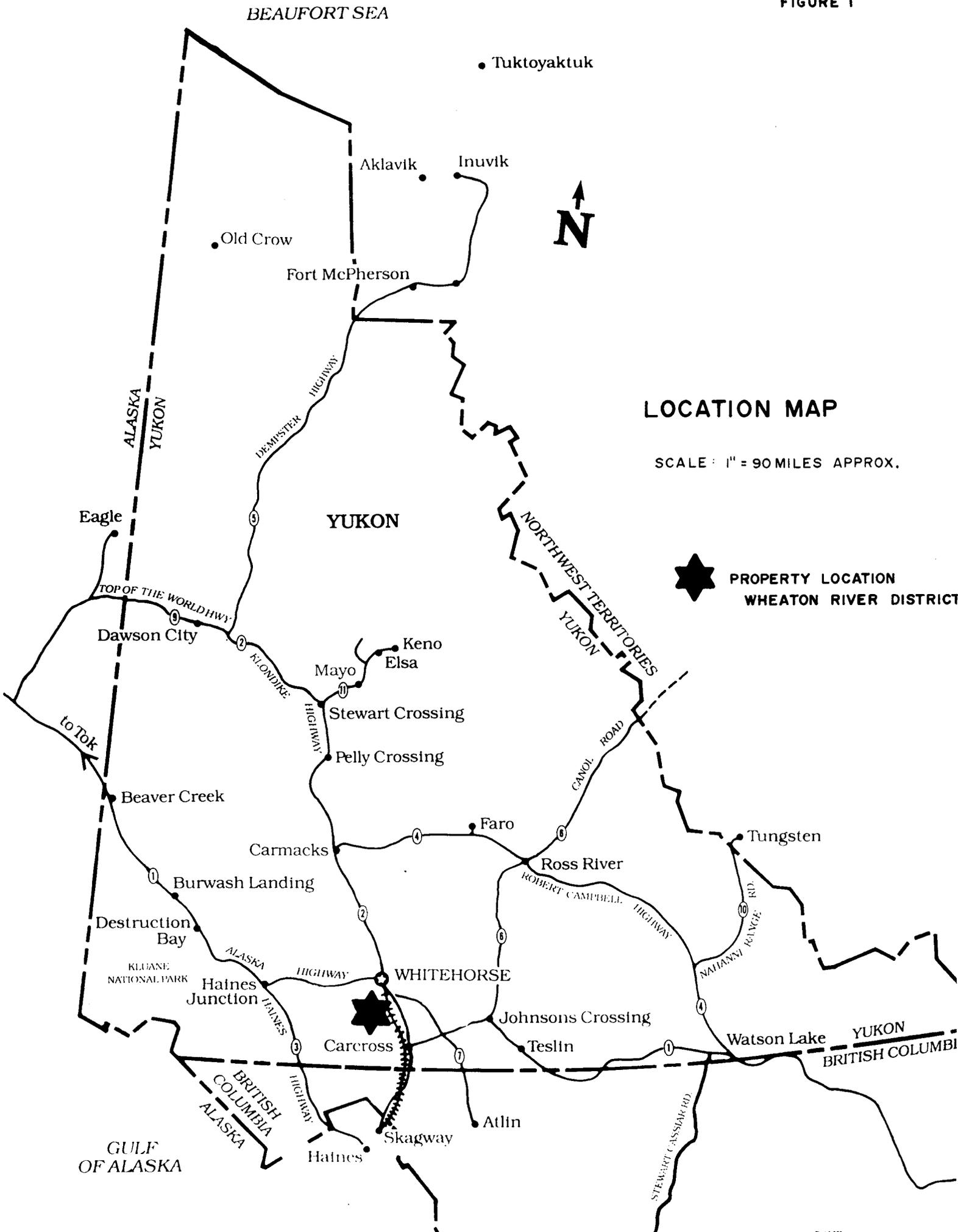
## LOCATION AND ACCESS

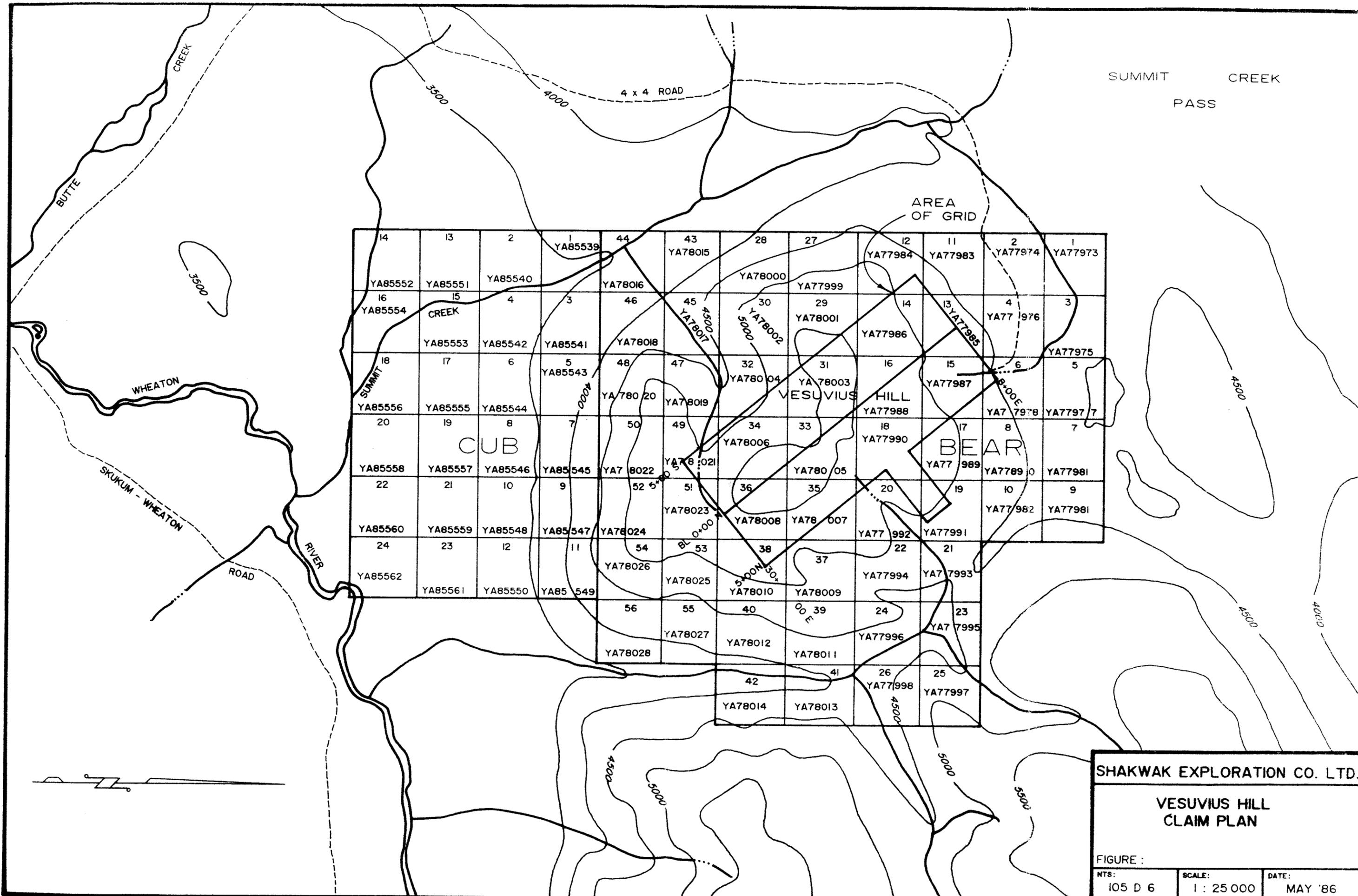
The BEAR and CUB claims are located approximately 50 km south of Whitehorse on claim sheets 105-D-3 and 105-D-6. Approximate geographical co-ordinates are 60°16' North and 135°16' West.

In July 1985 there was no road access to the property; exploration was carried out from a tent camp located on the property, using helicopters for access and support. All-weather roads lead from Whitehorse for 80 km via the Alaska Highway, Klondike Highway and Wheaton River Road to the camp and millsite of Mount Skukum Gold Mines, located 6 km southwest of the grid area on the BEAR claims. Commercial production at Mount Skukum began in March 1986 as a joint venture between Agip Canada Ltd. and Erickson Gold Mines.

In late 1985, a four-wheel-drive access trail was constructed from the Mount Skukum millsite to the north end of the BEAR grid.

FIGURE 1





SHAKWAK EXPLORATION CO. LTD.

**VESUVIUS HILL CLAIM PLAN**

FIGURE :

NTS: 105 D 6	SCALE: 1 : 25 000	DATE: MAY '86
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## PHYSIOGRAPHY, CLIMATE, VEGETATION

The BEAR and CUB claims cover a rectangular block of ground extending from the Wheaton River (elevation 900 m) at the south end for over 5 km across the summit area of Vesuvius Hill (1670 m) down to two small lakes between the Summit Creek and Thompson Creek drainage systems.

Local treeline is about 1200 m elevation; lower slopes are quite well vegetated with stands of conifers and poplar, with alder, spruce or willow underbrush. Above treeline, the slopes have grass or moss with some bushes and stunted trees; steeper slopes are talus-covered, with occasional rock outcrops.

Climatic conditions are generally those of similar elevations in the Carcross area, characterized by a northern interior climate modified by a warmer, moist influence of the nearby Pacific Ocean. Average annual precipitation is approximately 40 cm. Winters in the area are long, with temperature extremes to  $-40^{\circ}\text{C}$  but commonly in the  $-10^{\circ}\text{C}$  to  $-20^{\circ}\text{C}$  range. Summers are pleasant with temperatures up to  $25^{\circ}\text{C}$  and long hours of daylight during May, June and July. The area is generally snowfree from mid-May to late September.

## REGIONAL GEOLOGY

The Wheaton River district straddles the boundary between folded Mesozoic and Paleozoic volcanic and sedimentary rocks of the Whitehorse Trough and the granitic intrusive rocks of the Cretaceous Coast Crystalline Complex to the west. All of these units are locally overlain by volcanic rocks of the late Cretaceous/early Tertiary Skukum Group and intruded by rhyolite and andesite dykes of the same age.

The region has been mapped twice by the Geological Survey of Canada and the results published as Memoir 31 (D. D. Cairnes, 1912) and Memoir 312 (J. O. Wheeler, 1961). A re-interpretation of the regional geology formed part of the metallogenic map published as Open File EGS 1979-6 of the Department of Indian Affairs and Northern Development (G. W. Morrison).

A preliminary geological map of the Mount Skukum Volcanic Complex by Monica Pride was published as an open file by the Exploration and Geological Services Division of Northern Affairs in 1985; this map includes the area of the BEAR and CUB claims.

Much of the property is underlain by a variety of volcanic and volcanoclastic rocks of the Mount Skukum Complex; these are primarily felsic to intermediate flows and tuffs, locally brecciated. At the north side of the BEAR claims, a prominent zone of orange gossan and pale weathering alteration is developed over a small dyke or plug of porphyritic rhyolite. Pride (1985) has interpreted this sequence as part of an inferred "Vesuvius Hill-Mount Kopje" caldera.

Table 1:  
Table of Formations

QUATERNARY		Alluvium; glacial and fluvial deposits
QUATERNARY(?)	Miles Canyon volcanics	Basalt; minor pyroclastic rocks
TERTIARY	Skukum Group	Basalt, andesite, rhyolite flows, tuffs and breccias, dykes and sills
MID-CRETACEOUS	Coast Range intrusions	Medium-grained quartz-monzonite; granodiorite
JURASSIC	Tantalus Group	Mainly conglomerate
LOWER JURASSIC	Laberge Group	Greywacke, arkose, quartzite, siltstone, argillite and conglomerate
TRIASSIC	Lewes River Group	Andesite, basalt flows and pyroclastic equivalents; limestone; minor rhyolite flows
LOWER PALEOZOIC	"Yukon Group"	Metamorphic terrain; quartz-biotite schist; micaceous quartzite; minor gneissic units; marble

The general geology of the BEAR and CUB claims is shown in Figure 3.

**PREVIOUS EXPLORATION**

The earliest exploration work in the Wheaton River area pre-dates the Klondike Gold Rush by several years. The first recorded claims staked in the region were located by Frank Corwin and Thomas Rickman on Carbon Hill, Chieftain Hill and Mt. Anderson(?) during the summer of 1893. Additional prospecting in the Wheaton River District continued intermittently until 1906 when the discovery of gold and gold telluride bearing quartz veins on Gold Hill led to a staking rush which resulted in over 700 claims being located near the discovery and on Carbon Hill where Corwin and Rickman's original claims had been found. Many of the claims were further developed until the outbreak of WWI - with adit entry underground drifts driven on shear zones or veins on Gold Hill, Tally Ho Mountain, Mt. Stevens and Carbon Hill. After the termination of the war, additional exploration was conducted on several of the more promising occurrences and limited production arose from high grade zones at Tally Ho Mountain, Gold Hill and Mt. Stevens.

Most of the Wheaton River District then lay idle from the mid-1920's until the late 1940's as most exploration efforts during this period were directed to silver-lead veins in the Keno Hill area of central Yukon. From the 1940's until the early 1980's, the Wheaton River District witnessed only sporadic exploration activity as specific commodities were sought. During the 1970's, exploration reconnaissance programs were conducted in the region for porphyry copper deposits. With the increasing price for gold during the late 1970's, interest again revived for precious metal exploration in southern Yukon.

A regional exploration program conducted by Agip Canada Ltd. in 1980 led to discovery of gold-bearing vein structures at Mount Skukum in 1981. Subsequent diamond drill programs in 1982-1984 defined a commercial orebody consisting of 165,000 tons grading 0.73 oz gold and 0.63 oz silver per ton as finely disseminated gold hosted by quartz-calcite veining. Development work by Mount Skukum Gold Mines Ltd. (a subsidiary of Erickson Gold Mines Ltd. of Vancouver) proceeded during 1984-1985 under a joint venture agreement with Agip; production is scheduled to commence early in 1986.

The significance of this discovery was realized in 1983 and exploration activity in the Wheaton River district showed a dramatic increase during 1983-1985.

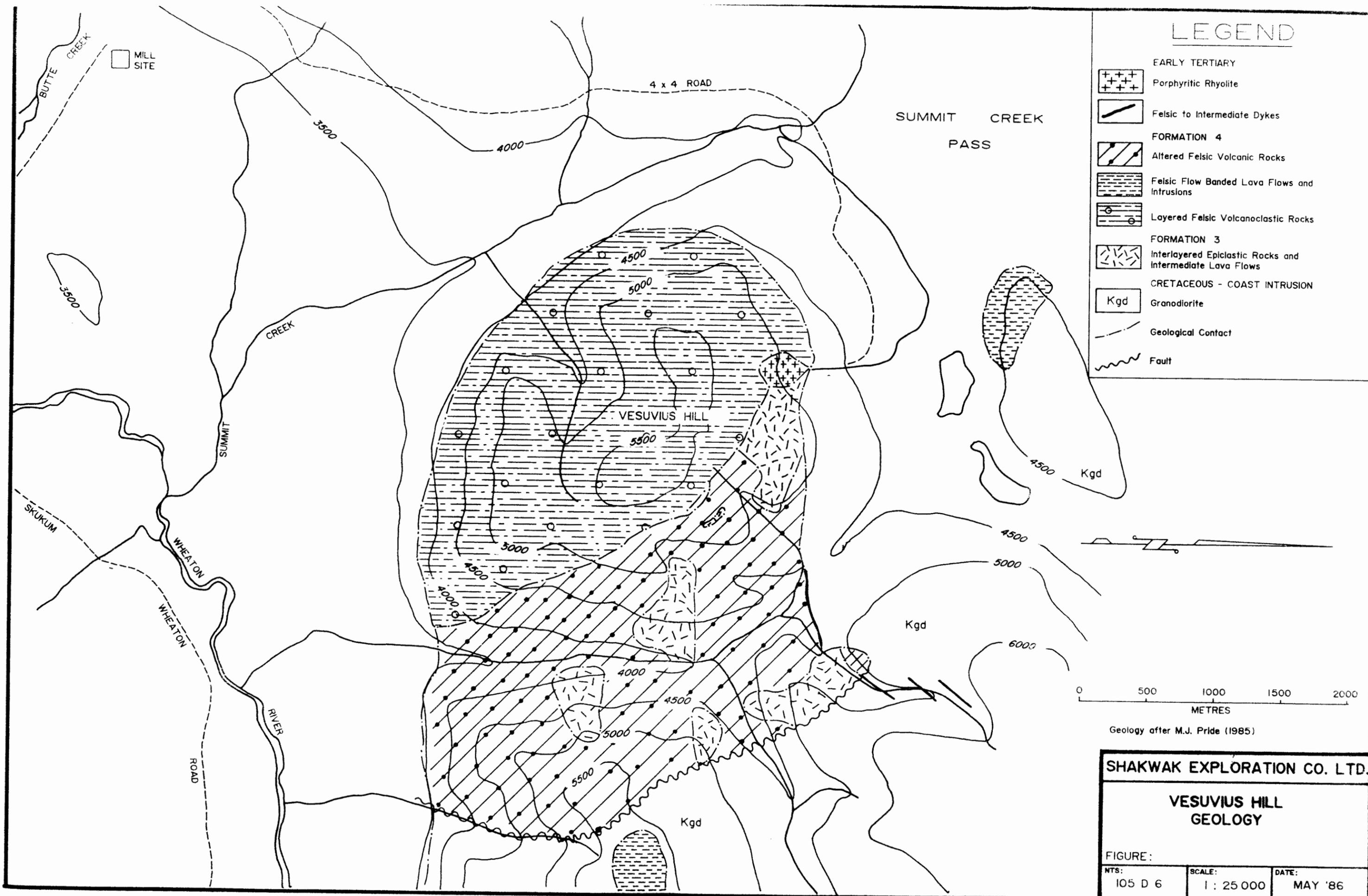
There is no record of earlier claims staked in the area of the present BEAR claims although it is believed that reconnaissance exploration for porphyry copper-molybdenum mineralization was carried out here in the late 1960's/early 1970's.

Only a limited amount of reconnaissance exploration was carried out by Agip Canada Ltd. prior to staking the BEAR claims in 1983. During a property examination in 1984, 12 rock samples were collected by staff of Kerr-Addison Mines Ltd. and analyzed for gold, silver, arsenic, antimony and mercury. Only the mercury analyses showed anomalous results: up to 1900 ppb. These samples were all collected from the gossan area near the north end of the BEAR claims.

#### EXPLORATION PROGRAM - 1985

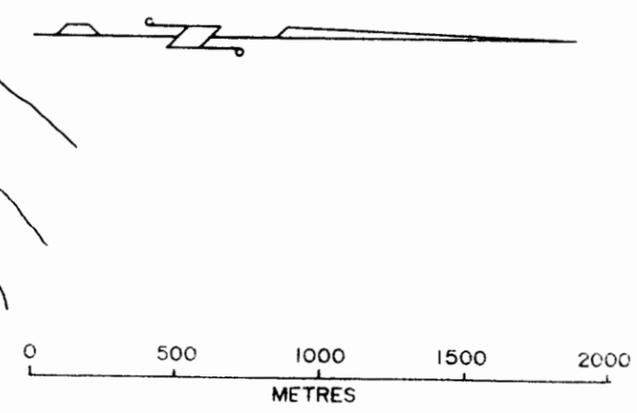
MBW Surveys Ltd. of Whitehorse were contracted to establish an exploration grid on the property. The baseline extends for 3 km at 140° from the northwest end of the gossan zone. Crosslines at 200 m intervals extend 500 m north and south of the baseline. A total of 15 line km of grid was set up; more detailed grids were laid out by the exploration crew in areas of interest, using the main grid for control.

Reconnaissance mapping and prospecting resulted in no additional zones of interest; the principal rock units are essentially as shown in Pride (1985). The shape of the rhyolite porphyry body in the gossan zone is uncertain; it is shown as a small stock in Pride (1985) but appears to have some narrow dyke-like extensions. There is considerable variation in the body, masked by extensive alteration, and perhaps two shear zones marked by fracturing and clay gouge.



# LEGEND

- EARLY TERTIARY
  - Porphyritic Rhyolite
  - Felsic to Intermediate Dykes
- FORMATION 4
  - Altered Felsic Volcanic Rocks
  - Felsic Flow Banded Lava Flows and Intrusions
  - Layered Felsic Volcanoclastic Rocks
- FORMATION 3
  - Interlayered Epiclastic Rocks and Intermediate Lava Flows
- CRETACEOUS - COAST INTRUSION
  - Granodiorite
  - Geological Contact
  - Fault



Geology after M.J. Pride (1985)

<b>SHAKWAK EXPLORATION CO. LTD.</b>		
<b>VESUVIUS HILL GEOLOGY</b>		
FIGURE:		
NTS: 105 D 6	SCALE: 1 : 25 000	DATE: MAY '86

Soil sampling was carried out on the grid on lines 100 m apart with a 50 m sample spacing. Some stations could not be sampled because of rock outcrops and extensive coarse talus. More detailed soil sampling was carried out on 50 m lines with a 25 m sample interval, particularly in the gossan area.

Samples were analyzed by Bondar-Clegg and Co. Ltd. Sample locations and results are shown in Figure 4.

During the period covered by this report, soil samples numbered 40001 - 40401 were collected and analyzed for gold and silver only; additional samples and the mercury analyses were all carried out later and are not included in the Statement of Expenditures. Analytical results were almost all very low. Most silver values were at background levels; there were only 14 samples with values between 0.6 and 1.0 ppm, and the maximum result was only 1.2 ppm. All gold values were at background or near-background levels except for an isolated value of 860 ppb gold (with no anomalous silver) at 2+00N on Line 9+00E.

An extensive program of rock sampling was carried out, in part to compensate for poor soil sample coverage in some areas and in part to test the significance of the Kerr-Addison rock sample results. Sample locations and results are shown in Figure 5. During the period covered by this report, rock samples numbered 20001 - 20106 were collected and analyzed for gold, silver and mercury; additional samples were collected later and are not included in the Statement of Expenditures.

There are no anomalous gold results. Silver values show a zone of strong enrichment in the altered rocks outcropping along the upper edge of the gully area formed by erosion of the gossan zone, with values as high as 24.0 ppm silver. These anomalies are not reflected in soil samples collected just down-slope. Mercury values show a strong anomaly (100 to 2050 ppb) centered over the area of the rhyolite porphyry plug, the gossan zone and the related gully. Isolated values as high as 2000 ppb are also found close to a small dyke-like extension of the rhyolite porphyry at 3+00N on Lines 16 and 17E.

## DISCUSSION

Although there are significant discrepancies in the geochemical data which are not resolved, and the lack of significant gold anomalies is disappointing, the coincidence of typical epithermal alteration with a high level geochemical signature (particularly in rock samples) confirms the gossan zone/altered rhyolite porphyry area as an important target zone for epithermal precious metal mineralization.

A program of induced polarization surveying was recommended (and carried out) to locate structures and alteration zones which might warrant drill testing.

## REFERENCES

- CAIRNES, D. D., 1912: Wheaton District, Yukon Territory. Canada, Department of Mines, Geological Survey Branch, Memoir 31 (153 pp).
- MORRISON, G. W., 1979: Metallogenic Map, Whitehorse, Yukon. Open File EGS 1979-6, Northern Affairs, Whitehorse, Yukon.
- PRIDE, M. J., 1985: Preliminary Geological Map of Mount Skukum Volcanic Complex. Exploration and Geological Services Division, Northern Affairs, Whitehorse.
- WALLIS, J. E., P.Eng., 1985: Preliminary Evaluation Report on the Bear and Cub Claims - Vesuvius Hill Project. Unpublished report for Shakwak Exploration Company Limited.





## APPENDIX I

### ANALYTICAL METHODS

All soil and rock samples were prepared and analyzed by Bondar-Clegg and Co. Ltd. at laboratories in Whitehorse and North Vancouver. Soil samples are sieved and a split of the minus 80 mesh fraction is analyzed. Rock samples are crushed and pulverized to approximately 100 or 150 mesh.

Gold analyses are by fire assay techniques, using a 10 g sample weight for soils and a 30 g sample weight for rocks. After preparation of the dore bead, the bead is dissolved in acid and the gold content of the solution determined by atomic absorption spectrophotometry.

Silver analyses are by standard atomic absorption techniques after digestion in nitric and hydrochloric acids.

Mercury analyses are by flameless atomic absorption spectrophotometry after sample digestion.

APPENDIX II

STATEMENT OF EXPENDITURES

Grid Establishment

MBW Surveys, Whitehorse \$ 2,025.00

Personnel

R. Robertson (geologist): 2 days	\$ 800.00	
M. Fekete (geologist): 10 days	1,425.00	
M. Vanveen (field assistant): 8 days	1,080.00	
M. Sawatsky (field assistant): 9 days	<u>540.00</u>	3,845.00

Vehicle/Expediting 206.00

Food/Field Equipment/Camp Supplies 600.00

Helicopter

Capital Helicopters: flight ticket 2156	\$ 567.50	
Trans Am Helicopters: flight ticket 238	<u>1,002.00</u>	1,569.50

Geochemical Analysis

Bondar-Clegg & Co:

401 soil samples (Au, Ag) @ \$9.65	\$3,869.65	
106 rock samples (Au, Ag, Hg) @ \$17.75	<u>1,881.50</u>	5,751.15

Map/Report Preparation 600.00

TOTAL EXPENDITURES \$14,596.65

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APPENDIX III

STATEMENT OF QUALIFICATIONS

I, RONALD CHARLES RAMSAY ROBERTSON, of the City of Whitehorse in the Yukon Territory, HEREBY CERTIFY:

THAT I am a Geologist employed by G. Macdonald and Associates Ltd. AND THAT I caused to be performed, and supervised, the work described in this report;

THAT I obtained a Bachelor of Science degree with First Class Honours in Geology from the University of Aberdeen, Scotland, in 1970 and subsequently carried out graduate studies at McMaster University, Hamilton, Ontario, and at Queen's University, Kingston, Ontario;

THAT I have been engaged in mineral exploration on a full and part time basis for sixteen years, of which eight have been on mineral exploration programs in the Yukon Territory, British Columbia and Alaska;

THAT I am a Fellow of the Geological Association of Canada (number F4858) and a member of the Canadian Institute of Mining and Metallurgy and the Prospectors and Developers Association.

DATED at Whitehorse, Yukon Territory, this 21 day of May, 1986.

Ronald C. R. Robertson

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