

**ARCHER, CATHRO**  
A ASSOCIATES (1981) LIMITED  
**CONSULTING GEOLOGICAL ENGINEERS**

1016 - 510 West Hastings Street, Vancouver, B.C. V6B 1L8 Tel: (604) 688 - 2568 • Fax: (604) 688 - 2578

**ASSESSMENT REPORT**

describing

**DIAMOND DRILLING**

on the

**BREAKAWAY PROPERTY**

Breakaway 1-10 Claims	YB57481-YB57490
11-14 Claims	YB57645-YB57648
15-40 Claims	YB66343-YB66368

Latitude 62°02' N; Longitude 132°14' W

NTS 105K/1

in the

**WHITEHORSE MINING DISTRICT**

**YUKON TERRITORY**

Prepared by

Archer, Cathro & Associates (1981) Limited

for

**EXPATRIATE RESOURCES LTD.**

W.A. Wengzynowski, B.A.Sc.  
February, 1998



093823

# TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION .....	1
PROPERTY, LOCATION AND ACCESS .....	2
HISTORY .....	3
GEOMORPHOLOGY .....	5
REGIONAL GEOLOGY .....	6
REGIONAL MINERALIZATION .....	10
PROPERTY GEOLOGY .....	14
GEOPHYSICS .....	16
DIAMOND DRILLING .....	17
DISCUSSION AND RECOMMENDATIONS .....	19
SELECTED REFERENCES .....	20

## APPENDICES

- I AUTHOR'S STATEMENT OF QUALIFICATIONS
- II SYNOPTIC DRILL LOG
- III CERTIFICATES OF ANALYSIS

## FIGURES

<u>NO.</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
1	Property Location . . . . .	Following Page 2
2	Claim Location . . . . .	Following Page 2
3	Tectonic Setting . . . . .	Following Page 6
4	Regional Geology . . . . .	Following Page 14
5	Property Geology . . . . .	Following Page 14
6	Drill Plan . . . . .	Following Page 16
7	Cross Section BR97-1 . . . . .	Following Page 18

## INTRODUCTION

Expatriate Resources Ltd. has a 100% interest in the Breakaway property which protects previously discovered but relatively untested soil geochemical and geophysical anomalies. The first ten Breakaway claims were staked in spring 1995 over the core of the previously identified anomalies while another thirty claims were added later that year bringing the total to forty.

The Breakaway property was explored by Expatriate in both 1995 and 1996 by crews working from Ross River. The 1995 exploration program consisted of road, grid and drill hole relocation, geological mapping, prospecting, soil sampling and excavation of four hand pits (Wengzynowski, 1996). Exploration in 1996 included re-establishing an old cut grid, geological mapping, prospecting, soil sampling, an HLEM-magnetometer survey and 650 m of excavator trenching (Duso, 1997).

The 1997 exploration program was conducted in early summer by a crew working from a trailer camp on the North Canal Road with daily helicopter support. The program consisted of one diamond drill hole totalling 92 m. The work was managed by Archer, Cathro & Associates (1981) Limited and supervised by the author. Appendix I contains the Author's Statement of Qualifications.

**PROPERTY, LOCATION AND ACCESS**

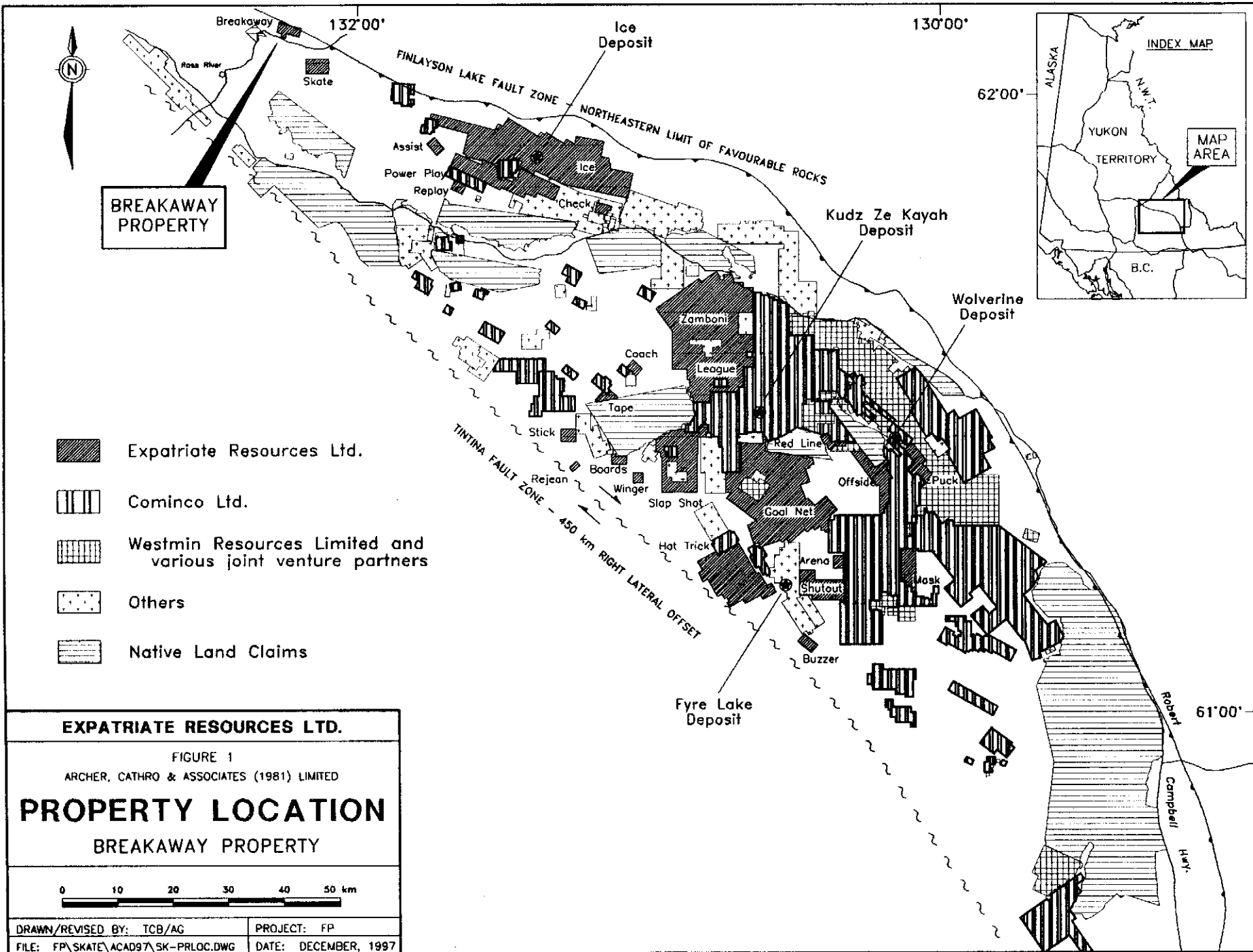
The property is located in southeastern Yukon at latitude 62°02'N and longitude 132°14'W on NTS map sheet 105K/1 (Figure 1). It is comprised of forty contiguous mineral claims registered with the Whitehorse Mining Recorder in the name of Archer, Cathro & Associates (1981) Limited which holds them in trust for Expatriate Resources Ltd. Figure 2 shows claim locations while claim registration data are listed below.

<u>Claim Name</u>	<u>Grant Number</u>	<u>Expiry Date*</u>
Breakaway 1-10	YB57481-YB57490	March 16, 2007
11-14	YB57645-YB57648	March 16, 2007
15-40	YB66343-YB66368	March 16, 2005

\*Expiry dates include 1997 work filed for assessment credit but not yet accepted.

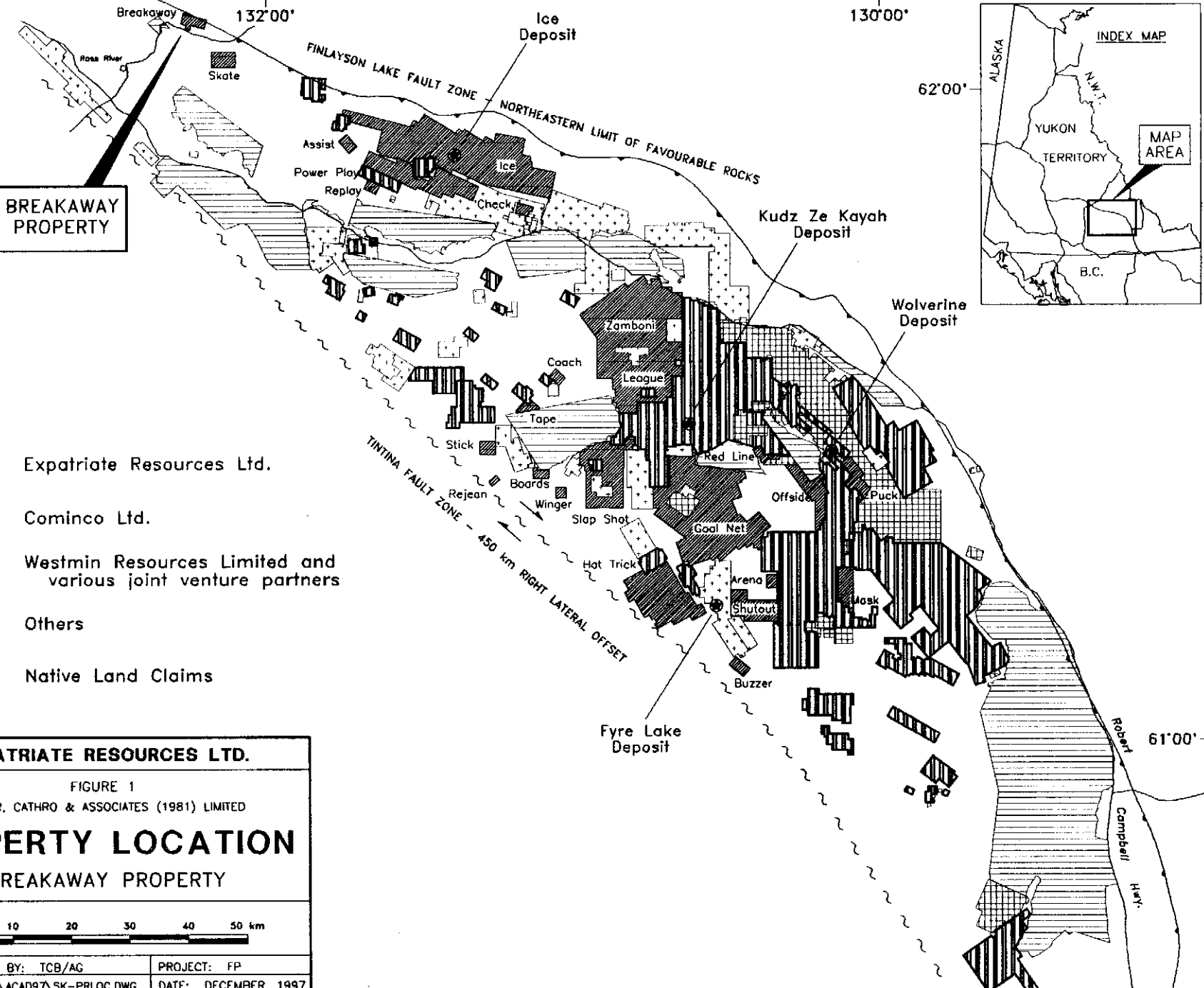
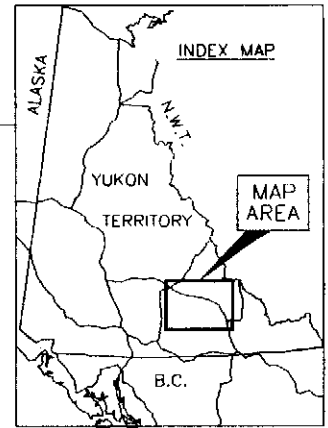
The property is situated immediately north of the North Canal Road some 15 km northeast of Ross River. This community is located 360 km by road northeast of Whitehorse and can be reached using the Klondike and Robert Campbell Highways. Access to the main exploration targets is provided by a system of partially overgrown bulldozer trails and winter roads.

The 1997 diamond drill program was supported by an Aerospatiale B1 helicopter contracted from Kluane Helicopters Ltd. The helicopter and crew were based at a temporary trailer camp located 2 km west of the property on the North Canal Road.



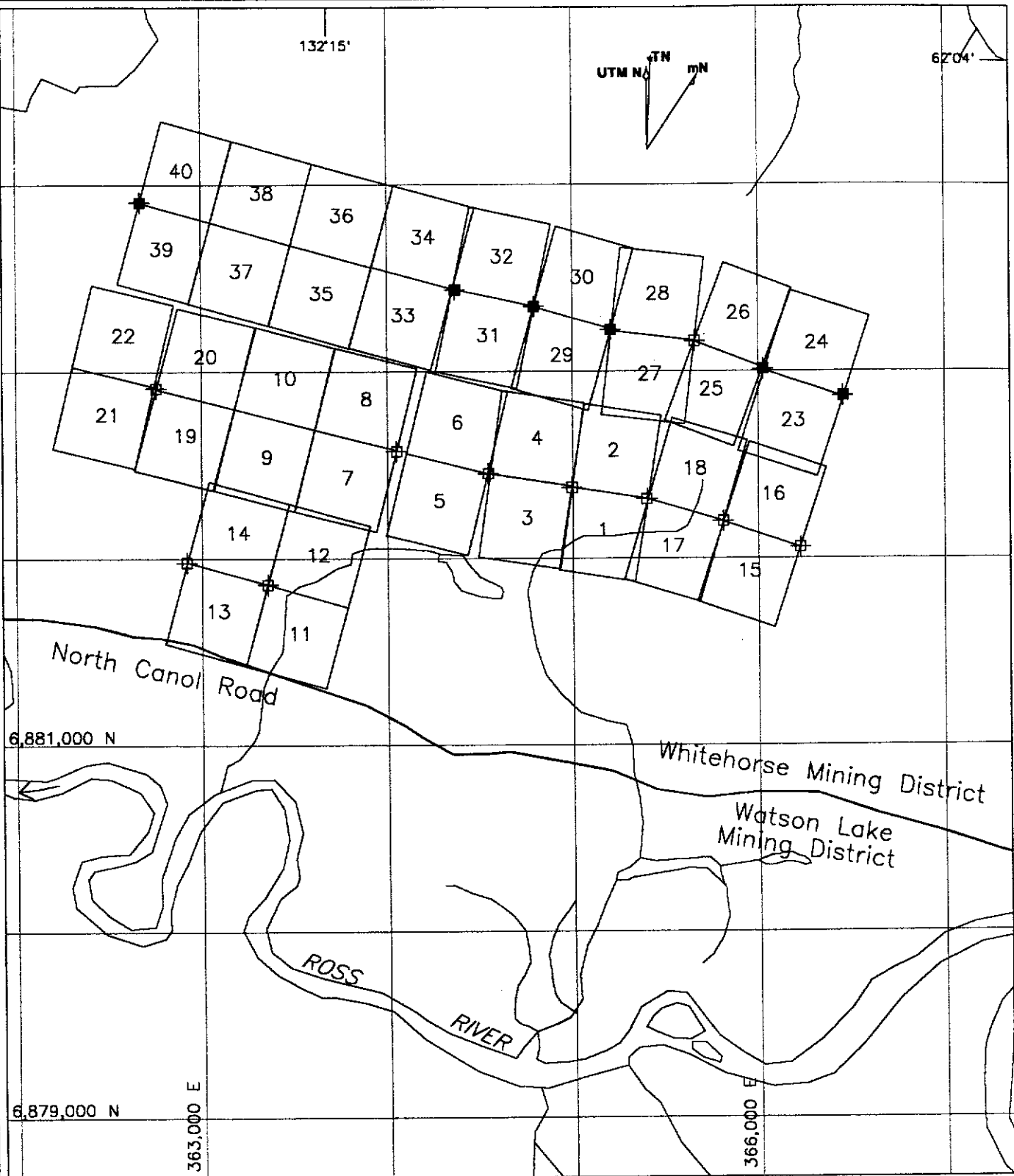
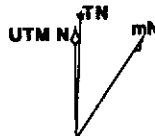
**BREAKAWAY PROPERTY**

- Expatriate Resources Ltd.
- Cominco Ltd.
- Westmin Resources Limited and various joint venture partners
- Others
- Native Land Claims



13215'

6204'

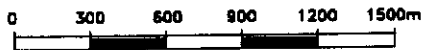


- Claim boundary
- Post location with standard GPS fix
- ⊕ Post location with poor GPS fix

**EXPATRIATE RESOURCES LTD.**

FIGURE 2  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**CLAIM LOCATION**  
BREAKAWAY PROPERTY



DRAWN/REVISED BY: TCB	PROJECT: FP
FILE: C:\FP\BREAK\ACAD97\BR-CU.DWG	DATE: Jan 27, 1998

## HISTORY

The area now covered by the property was first staked as the Tenas claims in August 1974 by Welcome North Mines Limited which optioned them to Boliden-Preussag in 1975 and conducted geological mapping, soil geochemistry and a Turam EM survey later that year.

In 1976 DuPont of Canada Limited and Western Mining Limited optioned the Tenas claim group and staked an additional 500 claims to the east and west. Exploration between 1976 and 1978 was modelled on the Anvil Range Deposits located 64 km to the northwest. Work included geological mapping, prospecting, grid soil sampling, gravity-electromagnetic-magnetic surveys and 155 m of diamond drilling in one hole. Geochemical sampling on the Tenas claims outlined two, 500 by 200 m, east-west trending areas of strongly anomalous lead and zinc response located approximately 500 m apart. The diamond drill hole tested a gravity anomaly on the eastern (up-ice) edge of the geochemical anomalies. No significant mineralization was encountered and the gravity anomaly was not explained.

In 1981 the Tenas claims were optioned by Cyprus Anvil Mining Corporation which drilled three holes downhill (south) from the geochemical anomalies. One hole intersected minor sphalerite in graphitic phyllite, however this mineralization is approximately 300 m down section from the rocks that are the probable source of the geochemical anomalies. DuPont's interest was transferred to CSA Minerals Inc. in 1984 but no further exploration was done before the claims were allowed to lapse.

Expatriate staked the Breakaway property in 1995 to cover a possible volcanogenic massive sulphide (VMS) target modelled on the Kudz Ze Kayah and Wolverine Deposits located approximately 130 km to the southeast. Subsequent exploration and research have shown that the Anvil Range Deposits are a more likely exploration target.

Work by Expatriate in fall 1995 focussed on the easterly lead-zinc geochemical anomaly previously outlined by DuPont. Soils collected along old cut lines confirmed the original anomaly and also yielded anomalous values for elements which were not previously reported, including copper (up to 262 ppm), silver (1.8 ppm), molybdenum (5 ppm), arsenic (666 ppm) and bismuth (36 ppm). Four hand pits were dug on the uphill edge of the geochemical anomaly. Soil profiles from three of four pits returned anomalous values for several elements, including two samples from a 40 cm thick hematitic soil horizon in Pit 3 which yielded 145 and 170 ppb gold, respectively (Wengzynowski, 1996).

The 1996 work included geological mapping, prospecting, additional soil sampling, a Maxmin-magnetometer survey and 650 m of excavator trenching. Soil sampling done in early spring was hampered by frozen ground. It returned scattered anomalous values but did not better define the DuPont anomalies. Trenching tested the strongest soil geochemical values. The best results came from Trench 1 which was cut in the vicinity of the 1995 hand pits and exposed a 9 m wide zone of massive to laminated limonite hosted by phyllite adjacent to a mafic igneous sill. Samples of the limonitic material returned weakly anomalous copper, silver and gold values (Duso, 1997). This zone was the focus of 1997 drilling.

## GEOMORPHOLOGY

The Breakaway property lies 15 km northeast of the Tintina Trench and covers a series of low hills and ridges within the Yukon Plateau. Creeks draining the property flow southward into the Ross River, which is part of the Yukon River watershed.

Local elevations range from 760 m on the Canol Road to 1280 m at the crest of a northwesterly-trending ridge situated along the northern edge of the property. Topographic relief is gentle from the road up to 820 m and moderate over the remainder of the property, averaging 20°. Pleistocene valley glaciers deposited variable amounts of glacial and glaciofluvial material over most of the property. Small areas on hillsides are blanketed by talus. Outcrop is rare.

The entire property is below treeline. Vegetation consists of moderately dense growth of stunted black spruce, willow and buckbrush near the Canol Road giving way to thick alder and buckbrush above 1300 m.

## REGIONAL GEOLOGY

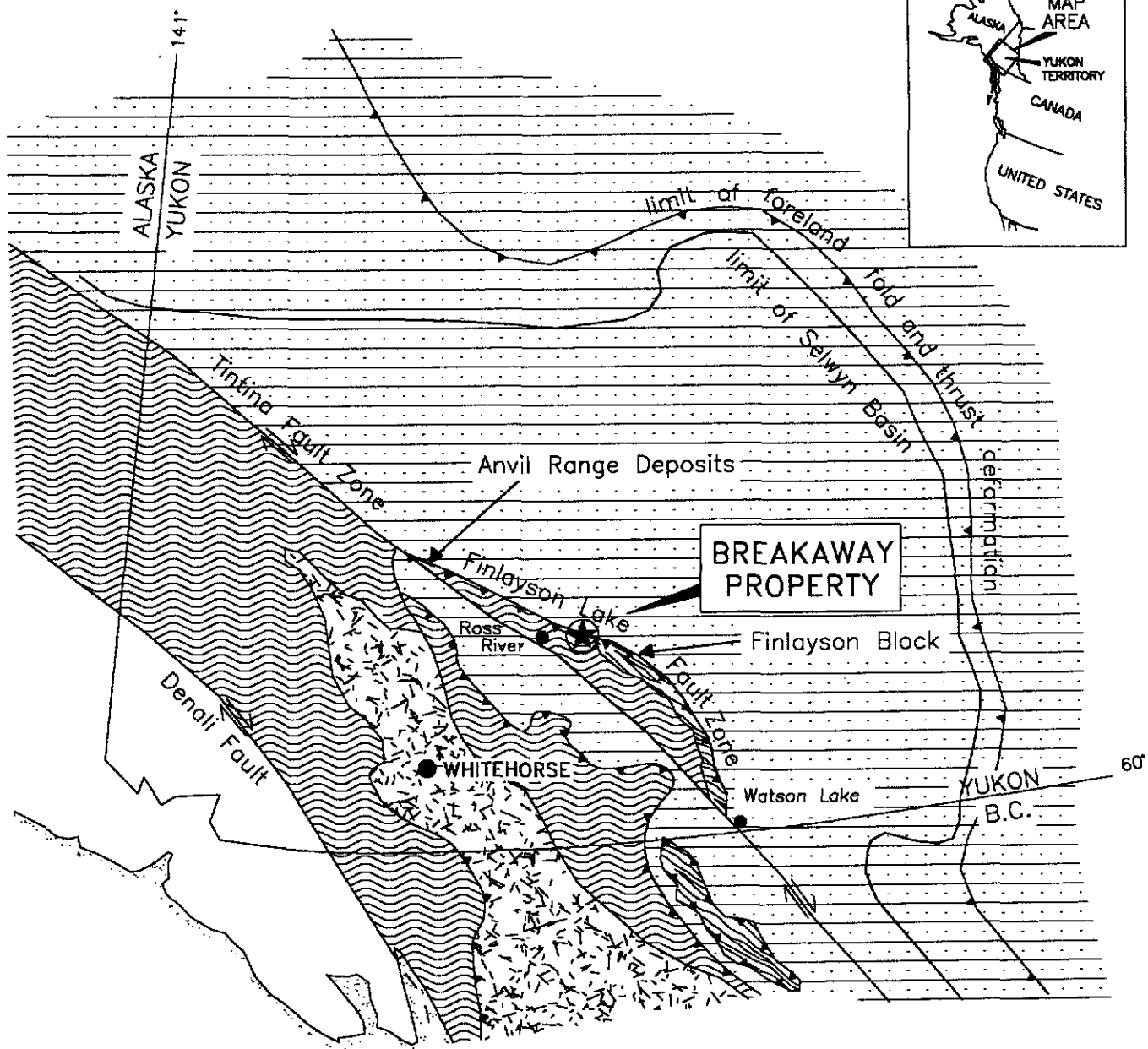
The Breakaway property lies near the Finlayson Lake Fault Zone, a system of thrust and high-angle faults which juxtaposes autochthonous strata of the North American Miogeocline with the allochthonous rocks of the Finlayson Block (Mortensen and Jilson, 1985) as illustrated on Figure 3. Although the most recent regional mapping (Gordey, 1990) suggests the rocks underlying the property belong to the North American Miogeocline, earlier mappers working on adjacent map sheets assigned the area to units belonging to the Finlayson Block. The Tintina Fault Zone, a major transcurrent structure with 450 km of dextral offset in Cretaceous times, lies about 15 km further to the southwest (Tempelman-Kluit, et al, 1976).







The following paragraphs describe the North American Miogeocline, Finlayson Block and units common to both regions. Regional mapping in the vicinity of the property was completed by the Geological Survey of Canada (GSC) and others as tabulated below.

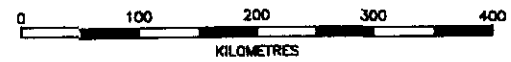
<u>Area</u>	<u>Organization</u>	<u>Scale</u>	<u>Reference</u>
105F	GSC	1:250,000	Tempelman-Kluit, 1977
105G	GSC	1:250,000	Tempelman-Kluit et al, 1976
	Industry/University	1:125,000	Mortensen and Jilson, 1985
105J	GSC	1:250,000	Gordey and Irwin, 1987
105K	GSC	1:50,000	Gordey, 1990

### North American Miogeocline

North American Miogeocline rocks in the vicinity of the Breakaway property are part of the Selwyn Basin, a large area of central Yukon where deep water shales accumulated along the ancient North American continental margin. The basin is bounded on all sides by coeval carbonate platform



-  Thrust fault
-  Steep fault
-  Yukon-Tanana Terrane
-  Slide Mountain Terrane
-  Stikinia and other Terranes
-  North American Miogeoclinal Strata

<b>EXPATRIATE RESOURCES LTD.</b>	
FIGURE 3 ARCHER, CATHRO & ASSOCIATES (1981) LIMITED	
<b>TECTONIC SETTING</b>	
BREAKAWAY PROPERTY	
	
DRAWN/REVISED BY: TCB/AG	PROJECT: FP
FILE: FP\BR\ACAD97\SK-TECTO.DWG	DATE: Feb 13, 1998

Modified after Mortensen and Jison (1985), Mortensen (1992) and Johnston and Mortensen (1994).

rocks except to the southwest where it has been offset by both the Finlayson Lake Fault Zone and Tintina Fault Zone. The stratigraphic sequence of the Selwyn Basin ranges from Late Proterozoic to Triassic.

Near the Breakaway property the oldest rocks within the Selwyn Basin are Pre-Cambrian to Lower Cambrian clastic sedimentary rocks of the Hyland Group (Gordey, 1990). Overlying these are non-calcareous phyllite and schists of the Lower Cambrian Gull Lake Formation (Mount Mye Formation). The Gull Lake Formation is overlain by calcareous phyllite and schists of the Rabbitkettle Formation (Vangorda Formation). Metabasite within the Gull Lake and Rabbitkettle Formations are conformable to the sedimentary rocks, however it is not clear if they are volcanic flows or dykes/sills (Jilson and Pigage, 1986). The youngest rocks in this area are the Duo Lake and Steel Formations of the Road River Group which is composed of pelitic sedimentary rocks with minor coarse clastics (Carne and Cathro, 1982).

The structural and metamorphic history of the North American Miogeocline is complex with up to six periods of Mid-Mesozoic deformation and concurrent metamorphism (Jilson and Pigage, 1986). Metamorphic grade ranges from middle amphibolite facies near the Late Cretaceous intrusive bodies to lower greenschist facies in less deformed areas.

### **Finlayson Block**

The Finlayson Block is a 380 by 60 km area comprised primarily of the Yukon-Tanana and Slide Mountain Terranes which represent the innermost of the accreted or "suspect" terranes in the Canadian Cordillera (Mortensen and Jilson, 1985). The northeastern margin of the block is the Finlayson Lake Fault Zone while the southwestern boundary is the Tintina Fault Zone.

The Yukon-Tanana Terrane consists largely of Paleozoic continental margin and/or arc stratigraphy deposited on a continental basement of uncertain origin (Mortensen, 1992). The Yukon-Tanana Terrane in the Finlayson Lake area contains three major packages, collectively termed the Layered Metamorphic Sequence. The lowermost unit consists of garnet-mica schist with interbanded marbles, calc-silicates and calcareous schists near the top. The middle unit is a carbonaceous quartzite, schist or phyllite with rare conglomerates and locally extensive felsic and mafic volcanic interbands. Radiometric dating of the felsic metavolcanics in the Finlayson Block has consistently resulted in Late Devonian to Mississippian crystallization ages. Immediately south of Finlayson Lake, large isolated outcrops of marble and quartzite which are poorly dated as Early Pennsylvanian to Early Permian (Tempelman-Kluit, 1979) form the uppermost unit of the Yukon-Tanana Terrane.

Gneiss and augen gneiss invariably occur low in the Yukon-Tanana succession beneath either the lowermost calcareous unit or the middle carbonaceous unit. Mortensen and Jilson (1985) considered the gneisses to be metamorphosed Mid-Paleozoic plutonic rocks. Conversely, Tempelman-Kluit (personal communication, 1996) considers these gneisses to be at least in part recrystallization of earlier stratigraphy. Radiometric dating of the gneisses has consistently resulted in Late Devonian to Mississippian ages (Mortensen, 1992). The gneisses occur in structural culminations with diameters on the order of 10 km and structural relief up to about 1 km.

The Devonian-Mississippian Simpson Suite (Mortensen, 1992) forms thick intervals of hornblende granodiorite and quartz monzonite higher in the Yukon-Tanana stratigraphic sequence. Mortensen and Jilson (1985) interpreted this suite as intrusive. Tempelman-Kluit (1979, personal

communication, 1996) mapped the suite as an allochthonous slice emplaced on top of the structural pile.

Metamorphic grades range from lower greenschist facies to middle amphibolite facies.

Contact hornfels occur locally around plutonic units.

Metamorphism and deformation are tentatively correlated with transpressive suturing of suspect terranes with ancestral North America. Suturing is restricted to the time interval of post-Triassic continuing into the Cretaceous. Whether deformation is continuous or sporadic has not been fully verified at present.

### **Units Common to Both Regions**

Slide Mountain Terrane consists of Late Devonian to Late Triassic disrupted oceanic crust (Mortensen, 1992). Lithologies include massive basalt, chert and mafic to ultramafic plutonic rocks occurring as fault-bounded slices along thrust faults and steep faults. These units occur in both regions but are most abundant near the northeastern edge of the Finlayson Block.

Younger units unconformably overlie units from Slide Mountain, Yukon-Tanana and North American Terranes. Mesozoic clastic rocks are Late Triassic, immature sediments containing cobbles from both Slide Mountain and Yukon-Tanana Terranes. Young volcanic rocks consist of Late Cretaceous to Tertiary felsic volcanic flows and volcanoclastic deposits. They are usually found in close proximity to the Tintina Fault Zone.

Mesozoic intrusive activity includes two suites. The first is comprised of several unmetamorphosed Early Jurassic mafic and intermediate composition plutons. The second suite consists of Late Cretaceous two-mica quartz monzonite and granite (Mortensen and Jilson, 1985).

## **REGIONAL MINERALIZATION**

Stratiform massive sulphide deposits occur in the North American Miogeocline and the Finlayson Block. The following is a description of the most important massive sulphide deposits in the vicinity of the Breakaway property.

### **North American Miogeocline**

Sediment hosted, stratiform massive sulphide deposits, collectively known as the Anvil Range Deposits, occur in North American Miogeocline strata (Selwyn Basin) 68 km west of the Breakaway property. The shales of the Selwyn Basin host most of Canada's large stratiform lead-zinc deposits. The Anvil Range Deposits differ from those in the remainder of the Selwyn Basin because the host rocks and mineralization are metamorphosed and significantly recrystallized. This has resulted in coarser grain size with improved metallurgical response (Jilson and Pigage, 1986).

The Anvil Range Deposits occur in a 150 m thick stratigraphic interval straddling the Gull Lake/Rabbitkettle contact. Individual deposits range from a single thick lens of sulphide with little or no interbedded metasedimentary rocks to stacked sulphide horizons with substantial metasedimentary and metavolcanic interlayers. Mineralization consists of semi-massive to massive pyrite with sphalerite and galena in a gangue of barite, quartz carbonate, pyrrhotite, magnetite and chalcopyrite. A cumulative total geological reserve for this district is 120 Mt (DIAND, 1995).

The following table lists grades and tonnage for individual deposits.

<u>Deposit</u>	<u>Tonnes (Mt)</u>	<u>Lead (%)</u>	<u>Zinc (%)</u>	<u>Silver g/t</u>	<u>Lead+Zinc Cutoff (%)</u>
Faro	57.6	3.4	4.7	36	4
Grum	30.8	3.1	4.9	49	4
DY	20.3	5.7	7.0	82	9
Vangorda	7.1	3.4	4.3	48	4
Swim	4.8	3.8	4.7	42	7

### **Finlayson Block**

A total of fifty-one mineral occurrences have been reported within the Finlayson Block (DIAND, 1995). Of these, twenty-one are known or suspected to be volcanogenic in origin while veins, skarns and asbestos occurrences comprise most of the remainder. Although the better known volcanogenic occurrences are thought to be of the Kuroko-type, some Besshi-type mineralization is also present (Morin, 1981; Johnston and Mortensen, 1994) and the recently discovered Ice Deposit is Cyprus-type. Two occurrences have definite economic potential, the Kudz Ze Kayah and Wolverine Deposits (Figure 1). These Kuroko-type occurrences are the main "type-deposits" for Expatriate's exploration at the Breakaway property and are briefly described below.

The Kudz Ze Kayah (ABM) Deposit lies within Yukon-Tanana Terrane near the centre of the Finlayson Block (Cominco Exploration, 1995; Whiteway, 1995). It is a VMS deposit hosted by an overturned assemblage of felsic pyroclastics, aphanitic massive rhyolites and metasiliclastic

rocks belonging to the middle unit of the Layered Metamorphic Sequence. Although both the sulphides and wallrocks are highly strained and exhibit pervasive schistosity, compositional layering in the vicinity of the deposit is relatively undeformed with a consistent, shallow northerly dip.

Sphalerite, chalcopyrite and galena are the main economic minerals while the gangue includes various mixtures of magnetite, barite, pyrrhotite, pyrite and carbonate. The deposit averages about 18 m thick and has been traced 700 m along strike and up to 400 m downdip. Open pit mineable ore reserves are reported to be 11 million tonnes grading 5.9% zinc, 0.9% copper, 1.5% lead, 130 g/t silver and 1.3 g/t gold (Schultze, 1996). Preliminary studies suggest that satisfactory lead, zinc and copper concentrates can be produced using conventional flotation processes (Cominco Exploration, 1995). The mineralization responds well to magnetic and electromagnetic surveys but geochemical response is somewhat erratic because the entire deposit is covered by 2 to 10 m of glacial till.

The Wolverine Deposit is located 25 km east of the Kudz Ze Kayah property near a contact between Yukon-Tanana and overlying Slide Mountain rocks. It consists of the Wolverine, Sable and Lynx Zones which are hosted by rhyolitic metavolcanics and argillites lying within the middle unit of the Layered Metamorphic Sequence. The mineralization consists primarily of semi-massive to massive pyrite and sphalerite with varying amounts of galena, chalcopyrite, tetrahedrite and native gold. The surface expression of the Wolverine Zone is marked by a vegetation kill zone containing weakly malachite-stained argillite while the Lynx and Sable Zones are blanketed by glacial till. Westmin has traced the deposit 700 m along strike and up to 450 m downdip. The

mineralization averages about 6 m thick and dips shallowly to the north. The Sable Zone, which lies about 1500 m to the southeast, was discovered in late 1997 when two holes yielded high grade intersections over narrow widths. All three zones contain significantly more zinc and precious metals than Kudz Ze Kayah. The most recent geological inventory is reported to be 6,237,000 tonnes grading 12.66% zinc, 1.33% copper, 1.55% lead, 370.9 g/t silver and 1.76 g/t gold (Westmin News Release, January 15, 1998). Soil geochemistry outlined weakly to moderately anomalous values along the projected surface trace of the deposit while magnetic surveys easily traced a laterally extensive, banded iron formation which occurs about 50 m up-section from the massive sulphide horizon. Interpretation of electromagnetic results is complicated by the presence of graphite within the argillite.

## PROPERTY GEOLOGY

Geology in the vicinity of the Breakaway property was mapped at 1:50,000 scale by the GSC (Gordey, 1990). Although this mapping places the property within non-calcareous pelitic sedimentary rocks of the Lower Cambrian Gull Lake Formation (Figure 4), property mapping has identified numerous calcareous interbeds suggesting this correlation may be inaccurate. Outcrops north and west of the property consist of pelitic sedimentary rocks assigned by Gordey to the Ordovician to Silurian Duo Lake and Steel Formations (Road River Group). The Rabbitkettle Formation, which usually overlies the Gull Lake Formation and in part hosts the Anvil Range Deposits, was not mapped in the area.

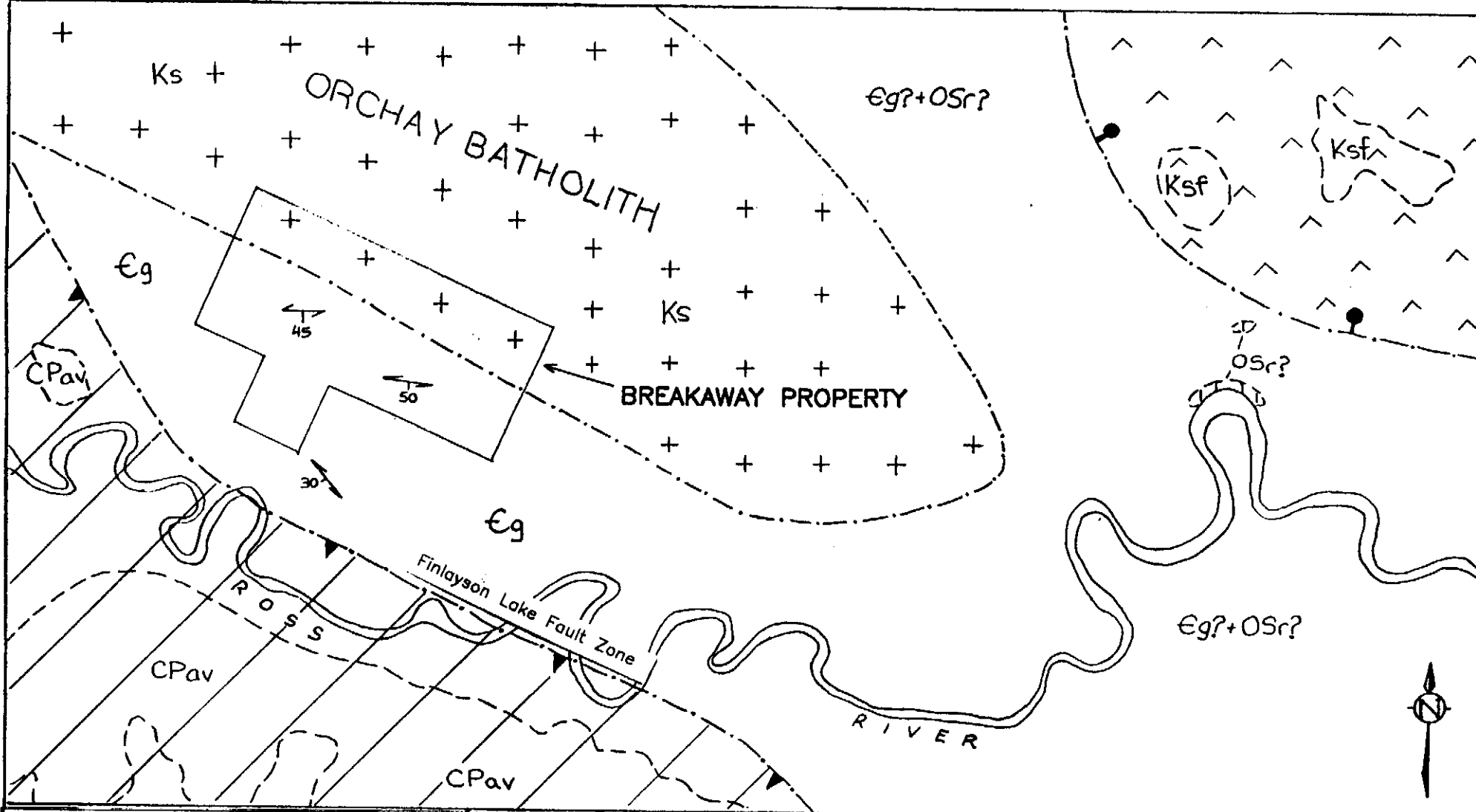
Property geology is illustrated on Figure 5 and the following descriptions are based on mapping by Expatriate geologists (Wengzynowski, 1996; Duso, 1997). Eight units have been identified on the property. Five are strained and metamorphosed sedimentary and igneous rocks while the remainder are relatively unstrained igneous units. Compositional layering parallels foliation and has an easterly trend with dips between 22 and 60° to the south.

### Lithology

**Slaty phyllite** ranges from thin bedded and platy to strongly foliated and fissile. It is black, blue or grey weathering and moderately pyritic in places. Thin graphitic phyllite, marble and limestone interbeds were encountered within this unit in the westernmost trench (Trench 2).

**Chlorite schist** is pale to dark green, well foliated and often contains quartz and/or muscovite. Foliaform quartz-carbonate veinlets are present in minor quantities.

**Biotite schist** is either grey-black or rusty weathering, blocky, competent and well foliated. It commonly contains muscovite and narrow foliaform quartz veins.

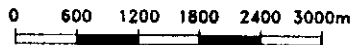


**EXPATRIATE RESOURCES LTD.**

**FIGURE 4**  
 ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**REGIONAL GEOLOGY**

BREAKAWAY PROPERTY



DRAWN/REVISED BY: GD

PROJECT: FP

DATE: DEC. 5, 1997

**North American Miogeoclinal**

- OSr Duo Lake, Steel Formations
- Cg Gull Lake Formation

**Slide Mountain Terrane**

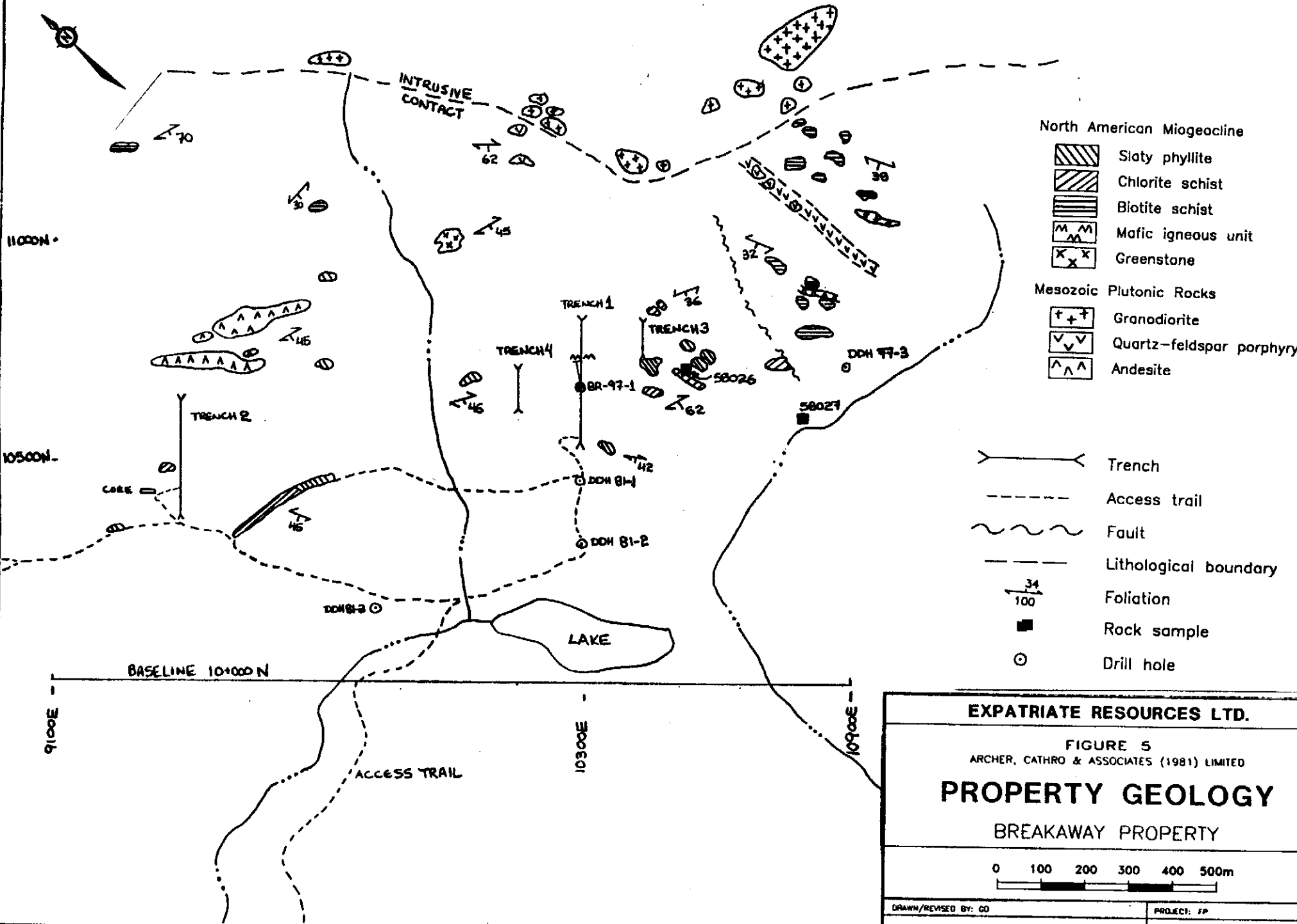
- CPav Basalt, ultramafic and sedimentary rocks

**Mesozoic Plutonic Rocks**

- Ksf South Fork Volcanics
- Ks Selwyn Plutonic Suite

- Thrust fault
- Steep fault
- Lithological boundary
- Limit of outcrop
- Foliation

34  
100



**EXPATRIATE RESOURCES LTD.**

FIGURE 5  
 ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**PROPERTY GEOLOGY**

BREAKAWAY PROPERTY

0 100 200 300 400 500m

DRAWN/REVISED BY: GO	PROJECT: FP
	DATE: DEC. 5, 1997

**Mafic igneous unit** is an aphanitic, green to black, dense, magnetic rock that is only seen in the 1996 trenches. It forms bodies that are usually massive but exhibit weak foliation and serpentinization in places. These bodies parallel stratigraphy and could be either sills or volcanic flows. The rock is composed of approximately 60% plagioclase with pyroxene and accessory magnetite.

**Greenstone** is yellowish green to dark green, aphanitic and moderately foliated. Identifiable minerals include chlorite and epidote with rare remnant feldspars.

**Granodiorite** is grey, blocky weathering and weakly foliated. It typically contains 50% feldspar, 40% quartz and 10% biotite. These rocks occur as a stock in the northern part of the property.

**Quartz-feldspar porphyry** is tan to yellow and unfoliated. It consists of 20 to 25% glassy quartz eyes and 10 to 15% euhedral feldspar phenocrysts in a yellow to white aphanitic matrix. The quartz eyes range from 1 to 3 mm in diameter while feldspar phenocrysts are 1 to 6 mm in diameter. This unit forms dykes in the northern corner of the claim block.

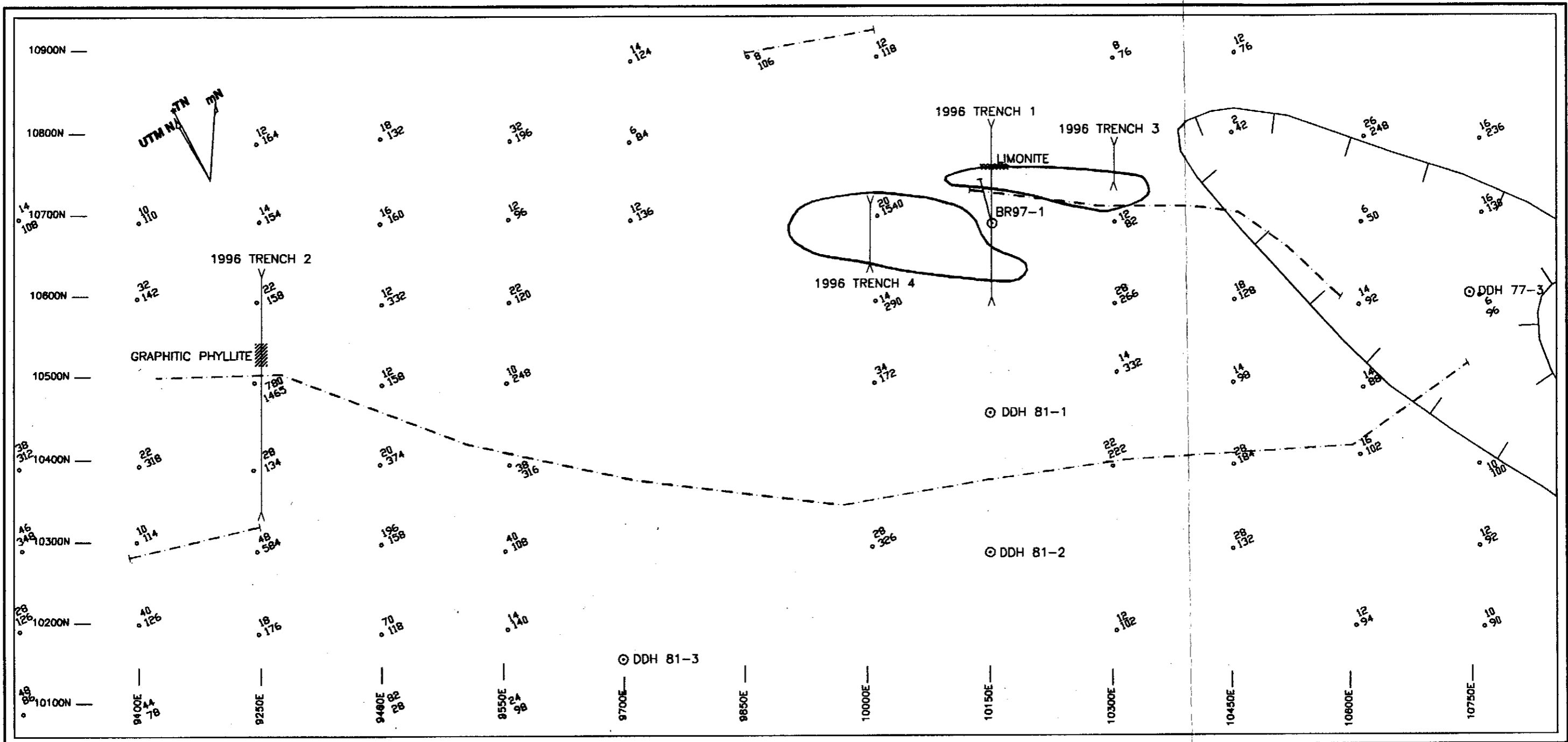
**Andesite** is grey to green, aphanitic to porphyritic and contains occasional visible remnant feldspars. It occurs as east-west trending dykes in the northern part of the property.

## GEOPHYSICS

In 1996 Amerok Geosciences Ltd. of Whitehorse conducted Maxmin and magnetometer surveys on the Breakaway property (Power and Lee, 1996). The Maxmin survey identified four northwesterly-trending conductors, two of which have been tested by trenching and drilling. Figure 6 is a compilation which shows the conductors as well as the location of soil samples, trenches, drill holes and the gravity anomaly outlined by DuPont.

The most interesting conductor has a strike length of 450 m and is accompanied by moderately strong magnetic response which is most likely caused by the mafic igneous unit. This conductor was tested in 1996 by Trench 1 and in 1997 by drill hole BR97-1. The results are discussed in the Diamond Drilling section. Trenches 3 and 4 were excavated 150 m to the east and west of Trench 1 and were also intended to test the electromagnetic conductor. Unfortunately both trenches encountered frozen ground and were abandoned before they reached the projected location of the conductor.

Trench 2 showed that a second conductor was the cause of a graphitic horizon in the slaty phyllite unit. The other conductors have not yet been tested.



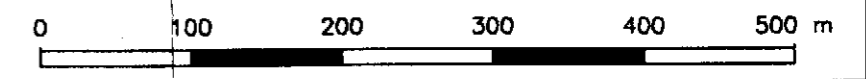
- EM CONDUCTOR
- TRENCH
- ⊙ DDH 81-3 DRILL HOLE COLLAR
- ∩ GRAVITY ANOMALY
- MAGNETIC ANOMALY

12/102 Soil sample location with lead in ppm over zinc in ppm

**EXPATRIATE RESOURCES LTD.**

FIGURE 6  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DRILL PLAN**  
BREAKAWAY PROPERTY



DRAWN/REVISED BY: AB/TCS	PROJECT: FP
FILE: FP\BREAK\ACAD3\COMP.DWG	DATE: Feb 9, 1998

## DIAMOND DRILLING

### General

The purpose of the drill program was to test beneath the 9 m wide limonite zone exposed in Trench 1. The program consisted of one diamond drill hole totalling 92 m. Drilling was done on June 8 and 9 with a Longyear 38 contracted from E. Caron Diamond Drilling Ltd. of Whitehorse. The drill equipment was mobilized from the Skate property 8 km to the southeast and demobilized to a trailer camp, 2 km west of the property. Crew transportation and drill moves were made by helicopter. The drill site was constructed by hand and the collar is marked with a 1.5 m long wooden plug.

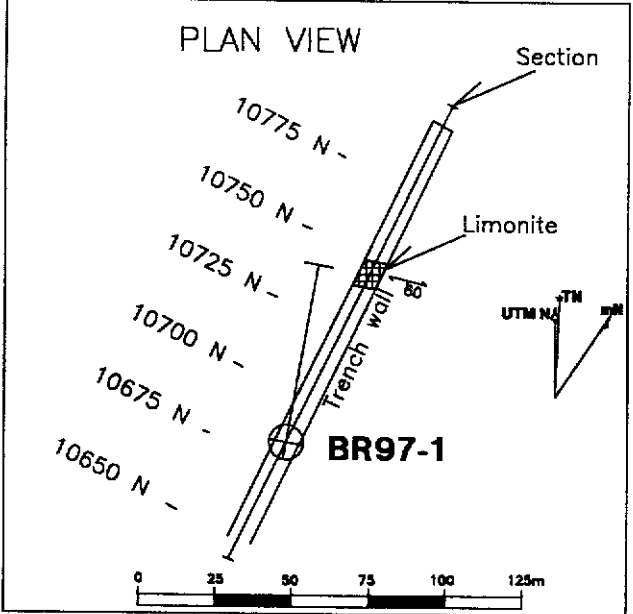
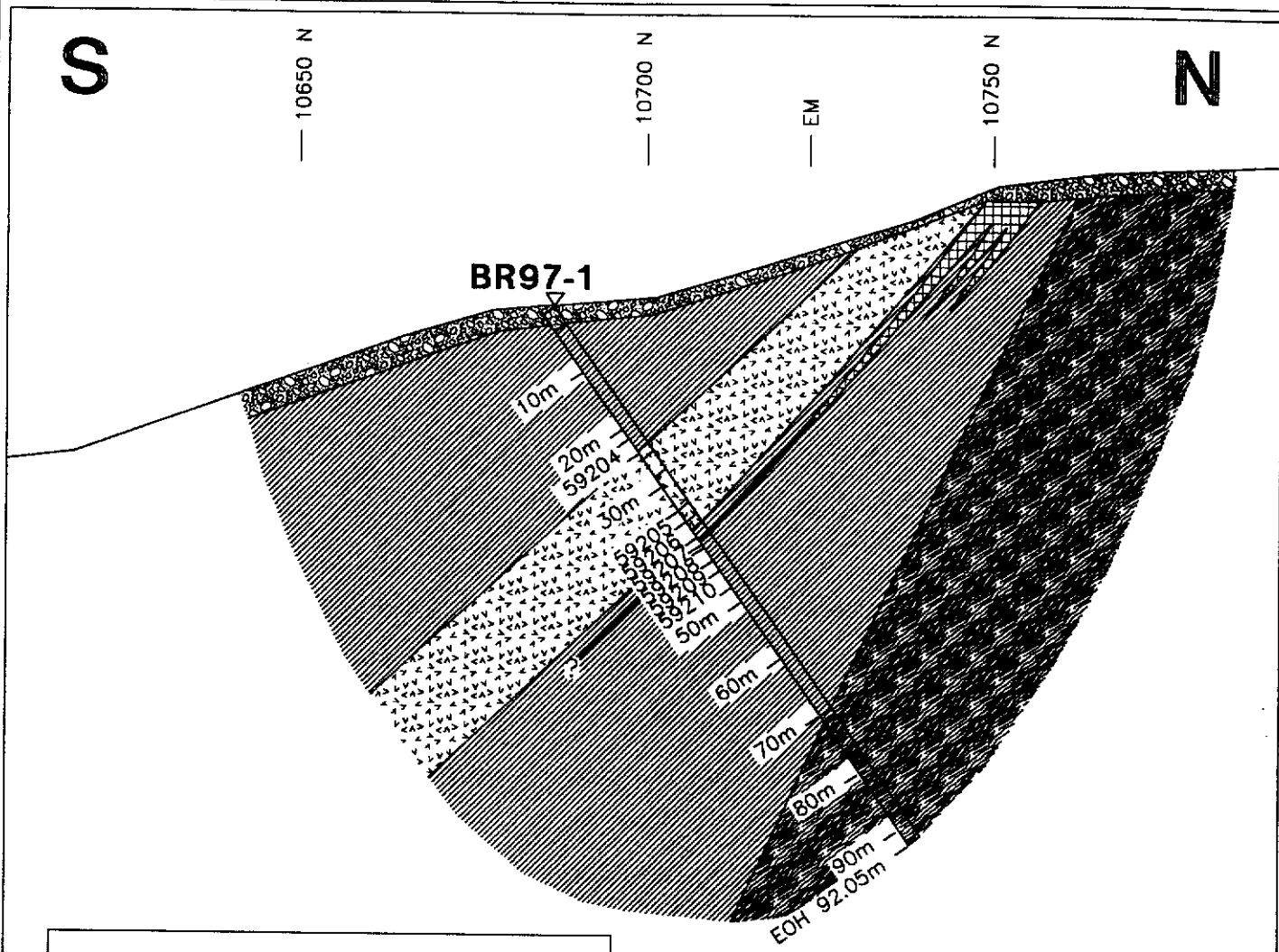
Drill core was flown to the trailer camp where it was logged and split. The synoptic drill log is in Appendix II. The core is stored at the drill contractor's equipment yard at MacRae, 16 km south of Whitehorse.







Intervals selected for analysis were split and the one-half was sent to Chemex Labs Ltd. in North Vancouver. All samples were crushed and pulverized to -150 mesh using a chrome steel ring mill, digested in a nitric-aqua regia solution and geochemically analyzed for 32 elements using ICP-AES technique. Samples were also assayed for gold. Certificates of Analysis appear in Appendix III.

## **Results**

Diamond drill hole BR97-1 was collared 60 m downhill to the southwest of the showing in Trench 1 and drilled at  $-55^{\circ}$  to the northeast (Figure 7). The surface showing occurs in the footwall of a mafic igneous body and is comprised of a foliated black phyllite with yellow to orange limonite layers ranging from 0.5 to 10 cm thick (Duso, 1997). Chip samples taken from the trench in 1996 averaged 287 ppm copper, 0.6 ppm silver and 14 ppb gold over a width of 9 m.

The drill hole intersected black to grey, locally siliceous and calcareous slaty phyllite which contains a 22 cm wide zone of net-textured pyrrhotite with lesser sphalerite and a few 1 to 3 mm wide pyrrhotite-sphalerite laminations. A 1.83 m sample (59207) which included this mineralization returned 0.26% zinc plus elevated values for molybdenum, cadmium, bismuth and tungsten. The sulphide zone is overlain by a 13.65 m wide band of the mafic igneous unit. The hole bottomed in a green-grey quartz-muscovite-chlorite schist. Foliation is well developed in the phyllite and schist while the relatively massive, mafic igneous unit has undergone minor serpentinization.



-  Overburden
  -  Slaty phyllite
  -  Quartz-muscovite-chlorite schist
  -  Mafic igneous unit
  -  Sulphide bearing interval
  -  Limonite
- 59206 Sample number

**EXPATRIATE RESOURCES LTD.**

Figure 7  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**CROSS SECTION  
BR97-1  
BREAKAWAY PROPERTY**

0 10 20 30 40 50m

DRAWN/REVISED BY: AB	PROJECT: FP
FILE:FP\BREAK\ACAD3\HOLE1.DWG	DATE: DEC 5, 1997

## DISCUSSION AND RECOMMENDATIONS

The Breakaway property is underlain by rocks of either the North American Miogeocline or Yukon-Tanana Terrane, both of which have potential to host significant massive sulphide deposit. Pre-1997 exploration programs on the property returned moderate to strong geochemical response for several elements (including lead, zinc and copper) and outlined areas of anomalous gravity and magnetic response plus four electromagnetic conductors. Excavator trenching has shown that the best conductor and magnetic anomaly overlies a thick limonite zone developed in shaly phyllite immediately under a magnetic mafic igneous body. The 1997 diamond drill hole tested beneath the limonite zone and intersected a 22 cm wide horizon containing semi-massive pyrrhotite and minor sphalerite at the same stratigraphic position. Assays from the limonite/sulphide horizon are metal enriched but sub-economic.

Future exploration should be done on a low priority basis and explore along strike from the limonite/sulphide horizon intersected in Trench 1 and drill hole BR97-1. This can be accomplished by deepening and extending Trenches 3 and 4. No further diamond drilling is recommended at this time.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

  
W.A. Wengzynowski, B.A.Sc.

SELECTED REFERENCES

- Ager, C.A.  
1977      Tenas Prospect Gravity Survey, C.A. Ager & Associates Ltd., August 2, 1977, p.18.
- Carne, R.C. and Cathro, R.J.  
1982      Sedimentary exhalative (sedex) Zn-Pb-Ag deposits, northern Canadian Cordillera; Can. Inst. Min. Metall., Bull. 75, No. 840, pp.66-78.
- Cominco Exploration  
1995      Kudz Ze Kayah Program, Yukon; Information handout from Cordilleran Roundup, Spring 1995.
- DIAND  
1995      Yukon Minfile, WP 5.1 Version, 20 Nov/95; Exploration and Geological Services, Indian and Northern Affairs Canada, Map 105K.
- Duso, G.J.  
1997      Assessment Report describing 1996 Geological Mapping, Prospecting, Geochemistry, Geophysics and Excavator Trenching on the Breakaway Property, Whitehorse Mining District, Yukon Territory for Expatriate Resources Ltd.
- Godwin, C.I., Gabites, J.E. and Andrew, A.  
1988      Lead Table: A Galena Lead Isotope Data Base for the Canadian Cordillera with a guide to its use by explorationists; Mineral Resources Division, Geological Survey Branch, Paper 1988-4, p.188.
- Gordey, S.P. and Irwin, S.E.B  
1987      Geology of Sheldon Lake (105J) and Tay River (105K) map areas, Yukon Territory; Geological Survey of Canada, Map 19-1987.
- Gordey, S.P.  
1990      Geology of Tenas Creek (105K/1), Swim Lakes (105K/2) and Faro (105K/3) map areas, Yukon Territory; Geological Survey of Canada, OF 2249.
- Jilson, G.A. and Pigage, L.C.  
1986      Field Guide to the Anvil Range Pb Zn Ag District, Yukon for Curragh Resources.

Johnson, S.T. and Mortensen, J.K.

- 1994 Regional setting of porphyry Cu-Mo deposits, volcanogenic massive sulphide deposits, and mesothermal gold deposits in the Yukon-Tanana Terrane, Yukon; Yukon Metallogeny: Recent Developments, Canadian-Yukon Economic Development Agreement, pp.30-34.

Maclean, K.A.

- 1977 Location of Drill Holes, Tenas Project; DuPont of Canada Exploration, October, 1977.

Morin, J.A.

- 1981 Volcanogenic iron and base metal occurrences in Klondike Schist, Yukon Geology and Exploration 1979-80, Department of Indian and Northern Affairs, pp.91-97.

Mortensen, J.K. and Jilson, G.A.

- 1985 Evolution of the Yukon-Tanana Terrane: Evidence from southeastern Yukon Territory; Geology, V13, pp.806-810.

Mortensen, J.K.

- 1992 Pre-Mid-Mesozoic Tectonic Evolution of the Yukon-Tanana Terrane, Yukon and Alaska; Tectonics, Vol.11, No.4, pp.836-853.

Power, M.A. and Lee, C.C.

- 1996 Ground Total Magnetic Field and HLEM Survey of Properties in the Finlayson Allochthon, Yukon Territory for Expatriate Resources Ltd. by Amerok Geosciences Ltd., December 6, 1996.

Schultze, H.C.

- 1996 Summary of the Kudz Ze Kayah Project, volcanic hosted massive sulphide deposit Yukon Territory; *in*: Yukon Exploration and Geology, 1995, Exploration and Geological Services Division, Yukon; Indian and Northern Affairs Canada, pp.29-32.

Tempelman-Kluit, D.J. Gordey, S.P. and Read, B.C.

- 1976 Stratigraphic and Structural Studies in the Pelly Mountains, Yukon Territory; Geological Survey of Canada, Paper 76-1A, pp.97-106.

Tempelman-Kluit, D.K.

- 1977 Geology of the Quiet Lake and Finlayson Lake map areas, Yukon Territory (105F and G); Geological Survey of Canada, OF-486.

- 1979 Transported Cataclasite, Ophiolite and Granodiorite in Yukon: Evidence of Arc-Continent Collision. Geological Survey of Canada, Paper 79-14, 27 pages.

**Wengzynowski, W.A.**

- 1996      Assessment Report describing 1995 Prospecting, Hand Trenching and Geochemical Surveys on the Breakaway Property, 105K/1, Whitehorse Mining District for Expatriate Resources Ltd., April, 1997.

**Westmin Resources Limited**

- 1998      News Release, Joint Release with Atna Resources Ltd; January 15, 1998.

**Whiteway, P.**

- 1995      "Fast-Tracking" ABM; *in* Canadian Mining Journal, June 1995, pp.17-21.

**APPENDIX I**

**AUTHOR'S STATEMENT OF QUALIFICATIONS**

## STATEMENT OF QUALIFICATIONS

I, William A. Wengzynowski, geological engineer, with business addresses in Whitehorse, Yukon Territory and Vancouver, British Columbia and residential address in North Vancouver, British Columbia, do hereby certify that:

1. I graduated from the University of British Columbia in 1993 with a B.A.Sc. in geological engineering, option 1, mineral and fuel exploration.
2. From 1983 to present, I have been actively engaged in mineral exploration in the Yukon Territory and am presently employed with Archer, Cathro & Associates (1981) Limited.
3. I have personally participated in and supervised the field work reported herein.



W.A. Wengzynowski, B.A.Sc.

**APPENDIX II**  
**SYNOPTIC DRILL LOG**

**SYNOPTIC LOG  
EXPATRIATE RESOURCES LTD.**
Property: BREAKAWAYHole: BR-97-1 Section: \_\_\_\_\_

Easting: \_\_\_\_\_

Northing: \_\_\_\_\_

Elevation: \_\_\_\_\_

Depth: \_\_\_\_\_

Logger: \_\_\_\_\_

G. Duso

10+300

10+682

92.05

Drilling Dates:

June 8-9, 1997

Depth	0.00	92.05			
Azimuth	15	15			
Dip	55	57			
Method	Level	Acid			

From (m)	To (m)	Interval (m)	*	Unit	Comments	From (m)	To (m)	Interval (m)	Sample No.	REC %	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)
0.00	3.00	3.00		CSDH	casing										
3.00	22.90	19.90	S	BLPH	black phyllite										
					-calcareous	21.28	24.99	3.71	59204	70	58	28	864	0.8	<5
22.90	23.70	0.80	T	BCPH	bleached, calcareous phyllite										
23.70	37.35	13.65	F	GNMV	green magnetic metavolcanic - feldspathic										
						34.46	36.30	1.84	59205	90	38	<2	64	<0.2	<5
37.35	38.54	1.19	F	BLPH	black phyllite										
					-calcareous	36.30	38.54	2.24	59206	100	158	12	108	0.2	<5
38.54	38.74	0.20	F	SXPH	phyllite + net textured pyrrhotite/sphalerite										
						38.54	40.37	1.83	59207	100	142	10	2600	0.4	<5
38.74	71.30	32.56	F	BLPH	black phyllite										
						40.37	41.75	1.38	59208	100	75	10	206	0.2	<5
71.30	92.05	20.75	F	QMSH	quartz-muscovite schist										
						41.75	44.78	3.03	59209	100	64	6	538	<0.2	<5
						44.78	47.85	3.07	59210	100	37	6	124	<0.2	<5
					EOH										

\*S-strong weathering, T-transitional weathering, F-fresh

**APPENDIX III**

**CERTIFICATES OF ANALYSIS**



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers

212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221 FAX: 604-984-0218

To: EXPATRIATE RESOURCES LTD.  
C/O ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
P.O. BOX 4127  
WHITEHORSE, YT  
Y1A 3S9

Page Number : 1-A  
Total Pages : 1  
Certificate Date: 12-JUL-97  
Invoice No. : I9730926  
P.O. Number :  
Account : MPO

Project : F.P.(BREAKAWAY)  
Comments:

## CERTIFICATE OF ANALYSIS

### A9730926

SAMPLE	PREP CODE		Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm
	FA+AA																				
059204	205	294	< 5	0.8	3.95	40	210	1.0	8	8.12	12.5	14	68	58	3.67	< 10	< 1	0.56	20	1.51	600
059205	205	294	< 5	< 0.2	3.14	< 2	< 10	< 0.5	< 2	1.60	< 0.5	55	749	38	4.87	< 10	< 1	< 0.01	< 10	6.38	600
059206	205	294	< 5	0.2	2.93	< 2	90	2.5	< 2	5.13	0.5	13	84	158	3.39	< 10	< 1	0.34	10	1.98	410
059207	205	294	< 5	0.4	3.90	< 2	70	2.0	16	1.88	44.0	22	127	142	5.66	< 10	< 1	0.22	10	2.17	585
059208	205	294	< 5	0.2	2.91	92	90	1.0	< 2	1.28	1.5	15	91	75	4.73	< 10	< 1	0.35	30	1.39	470
059209	205	294	< 5	< 0.2	3.00	< 2	80	1.5	4	0.85	8.0	14	77	64	4.59	< 10	< 1	0.25	30	1.59	360
059210	205	294	< 5	< 0.2	3.00	2	80	1.0	< 2	0.81	0.5	17	106	37	4.66	< 10	< 1	0.28	30	1.47	550

CERTIFICATION:

*Hart Buchler*



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers

212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221 FAX: 604-984-0218

To: EXPATRIATE RESOURCES LTD.  
C/O ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
P.O. BOX 4127  
WHITEHORSE, YT  
Y1A 3S9

Page Number : 1-B  
Total Pages : 1  
Certificate Date: 12-JUL-97  
Invoice No. : I9730926  
P.O. Number :  
Account : MPO

Project : F.P.(BREAKAWAY)  
Comments:

## CERTIFICATE OF ANALYSIS

A9730926

SAMPLE	PREP CODE		Mo	Na	Ni	P	Pb	Sb	Sc	Sr	Ti	Tl	U	V	W	Zn
			ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
059204	205	294	8	0.28	37	700	28	< 2	6	290	0.09	< 10	< 10	113	< 10	864
059205	205	294	< 1	< 0.01	639	260	< 2	< 2	6	32	0.02	< 10	< 10	73	< 10	64
059206	205	294	7	0.11	49	1080	12	< 2	5	167	0.08	< 10	< 10	82	< 10	108
059207	205	294	13	0.16	71	790	10	< 2	9	93	0.16	< 10	< 10	122	330	2600
059208	205	294	7	0.10	43	2480	10	< 2	4	61	0.03	< 10	< 10	63	< 10	206
059209	205	294	4	0.07	43	1000	6	< 2	4	46	0.05	< 10	< 10	49	< 10	538
059210	205	294	3	0.05	46	610	6	< 2	3	37	0.05	< 10	< 10	32	< 10	124

CERTIFICATION:

*Hart Bickler*