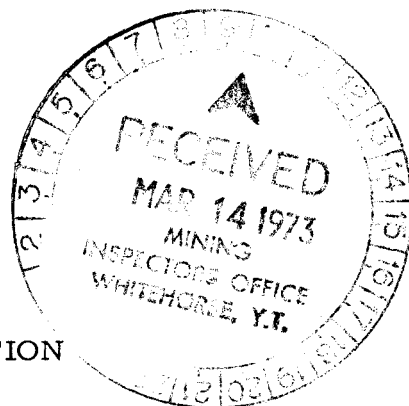



A GEOLOGICAL REPORT ON THE  
ZAN, AND PORTIONS OF THE TAF AND MX CLAIMS,  
WHITEHORSE MINING DISTRICT,  
YUKON TERRITORY  
LATITUDE 62°25'N, LONGITUDE 133°08'W

for  
KANGAROO EXPLORATION CORPORATION

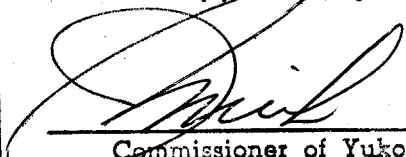


by  
P. F. Lewis, B.Sc.  
and  
J. G. Simpson, Ph.D., P. Eng.

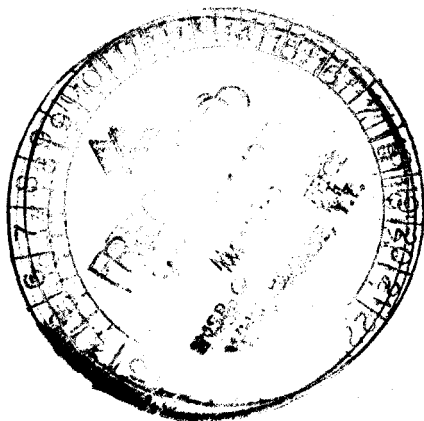
This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of \$1,200

  
Resident Geologist or  
Resident Mining Engineer

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

  
Commissioner of Yukon Territory

February, 1973



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INTRODUCTION

This report deals with a geological survey conducted on the ZAN, and portions of the TAF and MX claims - part of the Mount Mye Property owned by Kangaroo Exploration Corporation. The survey was conducted from 27 July to 17 August, 1972.

LOCATION AND ACCESS

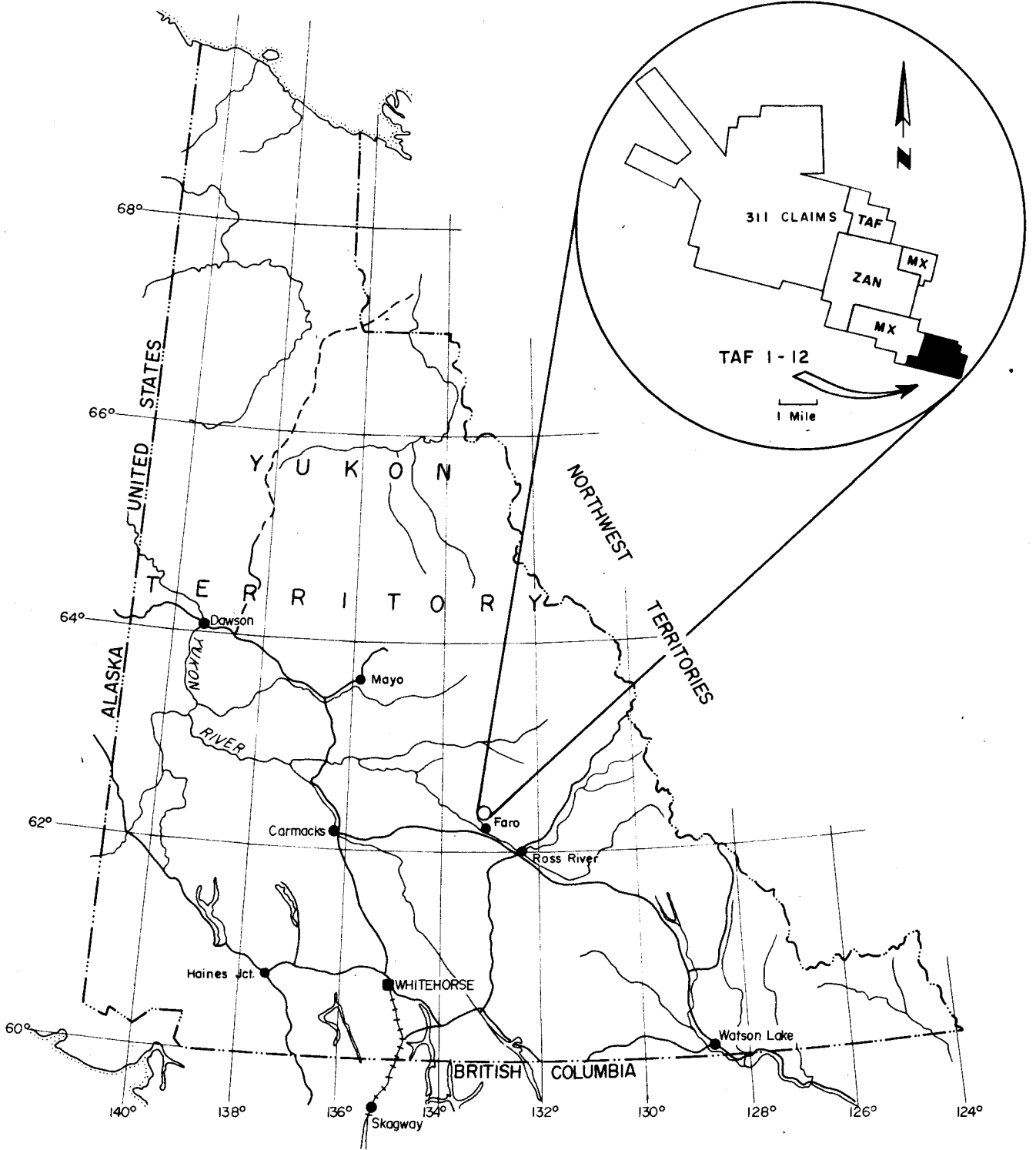
The Mount Mye Property is located 8 miles northeast of the Anvil Mine, Whitehorse Mining District, claim sheet 105-K-6, and lies between latitudes 62°22' and 62°28'N, and longitudes 133°01' and 133°18'W.

The Property is accessible by helicopter from Faro, 16 miles to the south, or by track vehicle from the Anvil Mine.

CLAIMS

The Property consists of 311 full-sized mineral claims duly recorded with the Mining Recorder in Whitehorse. The claims are listed below.

<u>Claim Name</u>	<u>Record Number</u>	<u>Recording Date</u>	<u>Expiry Date</u>
<u>AM - 14 claims</u>			
AM 1-14	Y63877-90	5-11-71	1-3-76
<u>KD - 26 claims</u>			
KD 1	Y61954	7-9-71	1-3-76
2	Y61962	"	"
3-4	Y62052-53	14-9-71	"
5-7	Y61955-57	7-9-71	"
8	Y61963	"	"
9-10	Y62071-72	15-9-71	"
11-12	Y62054-55	14-9-71	"
13-18	Y61964-69	7-9-71	"
19-22	Y62056-59	14-9-71	"
23-26	Y61958-61	7-9-71	"
<u>TAF - 64 claims</u>			
TAF 1-6	Y62459-64	29-9-71	29-9-72
7-12	Y62467-72	"	"
13-20	Y62475-82	"	1-3-76
21-22	Y62465-66	"	"
23-24	Y62473-74	"	1-3-75
25-64	Y62483-522	"	"



# KANGAROO EXPLORATION CORPORATION

## MT. MYE PROSPECT

### PROPERTY LOCATION MAP

YUKON  
SCALE : 1" = 100 MILES

<u>Claim Name</u>	<u>Record Number</u>	<u>Recording Date</u>	<u>Expiry Date</u>
<u>TIM - 32 claims</u>			
TIM 1-32	Y30297-328	11-2-69	1-3-75
<u>JET - 48 claims</u>			
JET 1-16	Y3142-57	17-3-66	17-3-74
18	Y3159	"	"
20	Y3161	"	"
22	Y3163	"	"
24	Y3165	"	"
45	Y3186	"	"
47	Y3188	"	"
49-64	Y3190-205	"	"
93	Y3234	"	1-3-75
95	Y3236	"	"
97-104	Y3238-45	"	"
<u>AC - 30 claims</u>			
AC 67-72	Y60492-97	5-4-71	5-4-74
75-88	Y60500-13	"	"
89-96	Y60516-23	"	"
111-112	Y60498-99	"	1-3-75
<u>MX - 49 claims</u>			
MX 1	Y30497	11-3-69	11-3-74
2	Y30498	"	11-9-74
3	Y30499	"	11-3-74
4	Y30500	"	11-9-74
5-13	Y30501-9	"	11-3-74
25-28	Y30521-24	"	11-3-74
30	Y30526	"	"
56-62	Y30552-58	"	"
119-122	Y30591-94	"	1-3-75
178-187	Y30637-46	"	"
186A-187A	Y30647-48	"	11-3-74
188-191	Y30649-52	"	"
192	Y60514	5-4-71	5-4-74
193	Y30654	11-3-69	11-3-74
194	Y60515	5-4-71	5-4-74
195	Y30656	11-3-69	11-3-74

<u>Claim Name</u>	<u>Record Number</u>	<u>Recording Date</u>	<u>Expiry Date</u>
<u>ZAN - 48 claims</u>			
ZAN 1-14	Y25973-86	9-9-68	9-9-74
15	Y26126	23-9-68	"
16-23	Y25987-94	9-9-68	"
24	Y25995	"	9-3-74
25-28	Y26127-130	23-9-68	23-9-73
29	Y26131	"	23-9-74
30	Y26132	"	23-9-73
31	Y26133	"	23-9-74
32	Y26134	"	23-9-73
33-36	Y26135-38	"	23-9-74
37-40	Y26139-42	"	23-9-73
41-44	Y26143-46	"	23-9-74
45-48	Y26147-50	"	23-9-73

This report describes geological work on and around the ZAN and portions of the TAF and MX claims, the work to be applied to assessment credit for TAF 1-12.

#### PREVIOUS WORK

Prior to acquisition by Kangaroo Exploration Corporation, the Mount Mye Property was covered by airborne E.M. and magnetometer surveys, and in part by gravity and geochemical surveys. Limited drilling had been undertaken to the north-west on ground subsequently staked by Kangaroo.

Kangaroo Exploration Corporation has undertaken comprehensive geochemical and geological surveys, and local detailed geophysical surveys including I.P., Turam and gravity, in the central and north-western portions of the property. Both these areas have been drilled and are the subjects of earlier assessment reports, in 1971 and 1972 respectively.

Previous work established the presence of a geochemical anomaly on strike with, and to the south-east of, the area drilled in 1971. This anomaly was staked as TAF 1-12.

The present report is on the geology of these claims, the drilled area, and areas to the north and east where good exposure facilitates an understanding of the geological setting of this anomaly.

#### PHYSIOGRAPHY AND VEGETATION

The area under consideration is an alpine-glaciated, mountainous terrain with elevations ranging from 4,200 feet in the flat bottomed, U-shaped

valleys, to 6,200 feet in the granite mountains to the south-west. These mountains are steep-sided and felsenmeer-covered, but have surprisingly little in-situ outcrop. North-east of the batholith the hills are lower and generally more rounded. This belt is underlain dominantly by schist and phyllite, in which lenses and bands of greenstone, amphibolite and calc-silicate gneiss stand out as resistant units with rugged outcrop. Further to the north-east, a belt of dominantly volcanic sub-outcrop gives rise to rugged mountains up to 6,000 feet above sea level.

These north-west trending lithological belts, and fault and fold structures of the same orientation, impart a strong regional grain to the district, while on a smaller scale, much of the drainage is apparently controlled by north-easterly trending cross faults. The area considered ultimately drains eastward into the Tay River.

Tree cover on the Property is negligible. The valleys are covered by dense buckbrush to an elevation of 5,000 feet and above 5,500 feet this is reduced to sparsely grassed alpine heath.

#### REGIONAL GEOLOGY

In very general terms, the mapped area lies on the north flank of the Anvil Arch (D. J. Tempelman-Kluit, 1972) in regionally metamorphosed sediments and volcanics of uncertain age (Palaeozoic). The Anvil Batholith of Cretaceous radiometric age forms the core of the Arch, and the strongly metamorphosed rocks are in turn flanked by less metamorphosed eugeo-synclinal sediments and volcanics.

The reader is referred to two Geological Survey of Canada publications (Roddick and Green, 1961 and Tempelman-Kluit, 1972) for conflicting geological descriptions of the area. The earlier work - mapping at four miles to the inch - has undergone stratigraphic revision in the light of new fossil discoveries made during the later mapping at two miles to the inch:-

1. It is now apparent that the Anvil Arch is flanked by both Triassic and Paleocene coarse immature sediments, implying uplift of the area in those times.

2. Fossils of Permo-Pennsylvanian, Upper Devonian - Mississippian, Middle Devonian and Ordovician - Silurian age have been found in the rocks of the Arch between those flanking Triassic and Paleocene sediments.

The major sources of conflict lie in the age range of the metamorphic pile and the age of metamorphism. At one extreme (op. cit., 1972), the rocks are considered to be Hadrynian - Permian in age with one main metamorphism in the late Cambrian or early Ordovician. At the other (op. cit., 1961), the rocks span only the Devonian and Carboniferous, and were metamorphosed in the Permian.

In support of the latter hypothesis it is suggested that Permian metamorphism is compatible with formation of Triassic post-orogenic sediments, and lead and rubidium-strontium isotope studies support homogenization of the sequence during the Permian (P. Le Couteur, personal communication).

Sulphur isotope studies on barytes from the Faro deposits support its formation in Cambrian seas (D. Sangster, personal communication).

## DETAILED GEOLOGY

This section of the report relies on an overview of the geology gained from mapping of both sheets (1 and 2) shown on the location map inset on the enclosed geological map (see also page 15).

### Stratigraphy

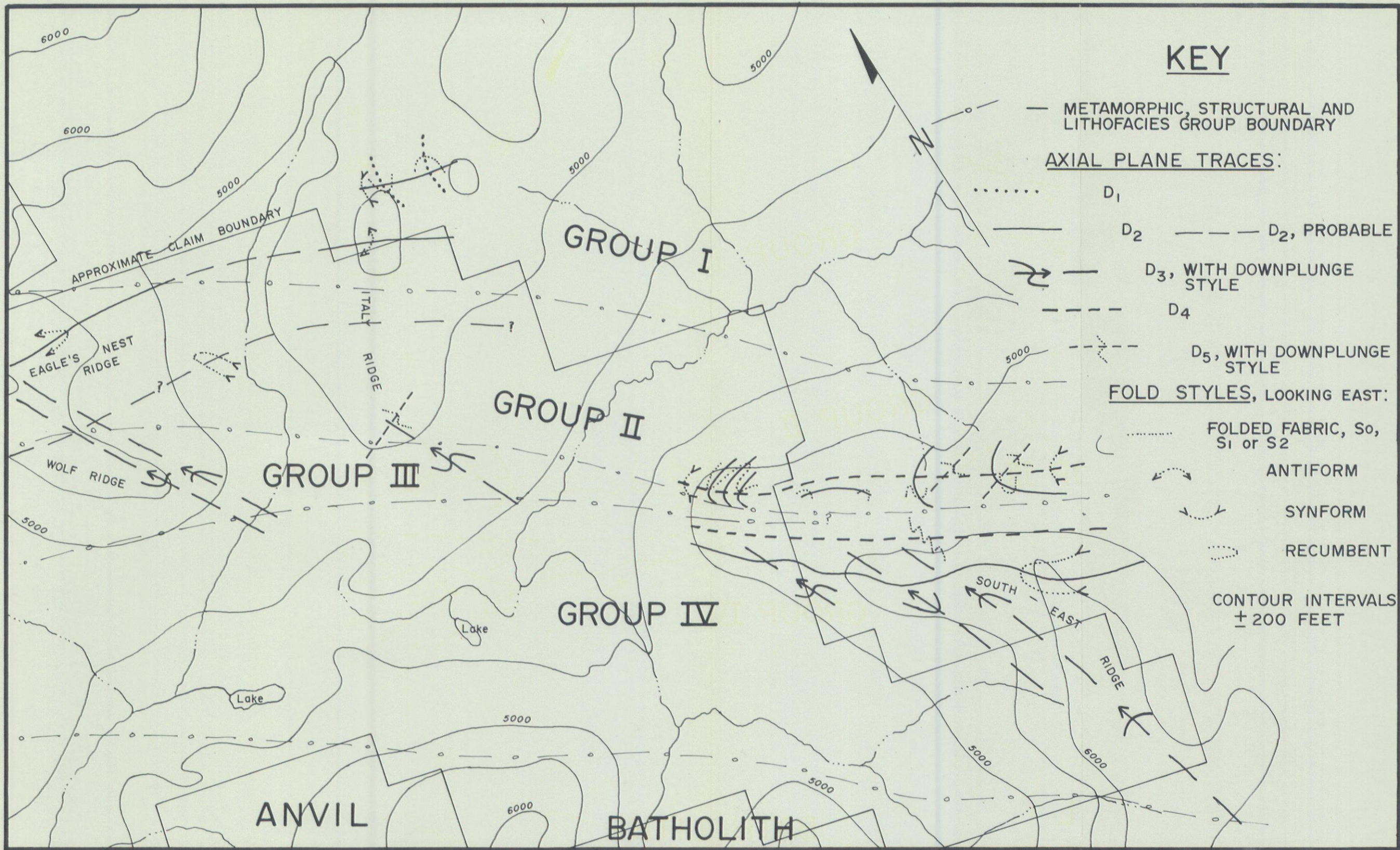
Detailed mapping has shown that the G.S.C. stratigraphic succession is in fact a metamorphic and structural gradient superimposed on different lithofacies which are, at least in part, stratigraphically correlatable. This superposition allows the areal classification of rock-types as follows:

Group I - in which depositional structures such as graded bedding, syn-sedimentary slumps, pillow structure, vesicles, etc., can be recognised. The rocks are of sub to low-greenschist facies metamorphic grade and are almost always foliated. Degree of development of foliation is a function of rock composition, ranging from a pervasive slaty cleavage in metapelites to absence of foliation in coarse basic igneous rocks and some pillowed varieties. The foliation is commonly lineated by both mineral alignment and crenulations, the latter occasionally giving rise to a crenulation foliation. A fracture cleavage probably equivalent to the crenulation foliation is sometimes present cross-cutting the early foliation in the more competent volcanic members of this group.

Group II - in which depositional structures are generally destroyed and foliation is usually pervasive and well developed. The coarse-grained basic igneous bodies are notable exceptions, being massive. Metamorphism is sub-biotite grade in the greenschist facies. In pelitic rocks the crenulation foliation is dominant, the earlier foliation being represented by intrafoliate lithon structures.

Group III - in which lithon structure in pelitic rocks is rare and relic. Metamorphism is biotite, sub-garnet grade in the greenschist facies.

Group IV - in which lithon structure is absent, metamorphism is upper-greenschist/amphibolite facies (garnet and staurolite in pelites).



**FIG. 2 : METAMORPHISM, STRUCTURE, LITHOFACIES, NOMENCLATURE**

The secondary crenulation foliation has become pervasive schistosity in pelites, whereas calc-silicate gneisses and marbles retain an earlier pervasive gneissic banding.

The lithofacies on which these structural and metamorphic characteristics are superimposed are as follows:

Group I. Dominantly volcanic with probable calc-alkaline affinities i. e. andesitic with minor more acid and basic members. Minor sub-aqueous sediments and tuffaceous limestone.

Group II. Dominantly pelitic, but with a high percentage of volcanic material. Minor limestone.

Group III. Dominantly pelitic. Minor limestone and volcanic material.

Group IV. Dominantly pelitic, but with a high percentage of impure limy sediments. Minor volcanic material? (amphibolite lenses are noted in regional mapping (1972)).

Rock types mapped within the groups are as follows:

#### GROUP I:

Unit 10. Crystalline limestone with tuffaceous bands. The degree of purity is outlined by variable development of slaty cleavage.

Unit 9. Massive medium to coarse-grained metabasite of probable dioritic to gabbroic composition.

Unit 9v. Dark green vesicular metavolcanics. Limy inclusions imply destroyed pillow structure.

Unit 9p. As 9v but with recognisable pillow structures.

Unit 8v. Pale green vesicular metavolcanics, with possible relic phenocrysts. Probably of andesitic composition, but rare.

Unit 8p. Pale green, small, pillows in a dark matrix, associated with 8a. Rare.

Unit 8a. Pale green to neutral angular fragments of vesicular volcanic material in a dark green volcanic or orange limy matrix. Association with 8p implies that these rocks are andesitic pillow breccias - brecciated by rapid quenching, in sea water, of a viscous magma.

Unit 8t. Metatuff, sometimes pisolitic but without recognisable bedding.

Unit 8ta. Sub-aqueous tuff with fine graded bedding. Occasional syn-sedimentary slumps are recognisable.

Unit 7t. Fine-grained, buff tuffaceous sediments.

Unit 6s. Medium-grained, grey, fine banded, quartzose pelite.

Unit 6b. Alternating beds of buff metasiltstone and grey limy slate, probably indicating turbidite or flyschoid deposition. Beds are generally from 1 inch to 1 foot thick.

Unit 5g. Graphitic banded slate, exposed just off the mapped area to the north.

#### GROUP II:

Unit 10. Impure marble and slaty marble, with calc-silicate stringers outlining the foliations. Strain in these rocks is markedly heterogeneous giving rise to bands with well-developed secondary foliation separating "mesolithons" (outcrop scale) with close to isoclinal folds in the early foliation and a weakly developed secondary cleavage.

Unit 9. As in Group I. Analysis of Unit 9 from Eagle's Nest Ridge (Fig. 2) by the G.S.C. (1972) indicates a basic rock (46%  $\text{SiO}_2$ ). Very low CaO and high alkali and  $\text{TiO}_2$  contents imply spilitic affinities, and that this coarse basic body may be a sill intruded into unconsolidated subaqueous sediments.

Unit 8. Generally pale to medium green well foliated greenstone with dominant early foliation and later crenulation foliation. Some varieties have a banding, similar to Unit 8ta, parallel to the early foliation and controlling later mesolithon development.

Unit 7. Buff to neutral, fissile, phyllitic rock probably representing highly sheared Unit 8a and metamorphosed Units 7t and 8t.

Unit 6. Dominantly chlorite-sericite phyllite with a crenulation cleavage and micro to mesolithon structures. Often very limy giving a thinly laminated (1 mm) lime - phyllite rock and consequent development of a widely spaced crenulation foliation. The presence of numerous electromagnetic conductors in this unit indicates that graphitic members are present.

Unit 5. Highly contorted quartzose, graphitic phyllite. Significantly, this rock type outcrops and is traceable by electromagnetic methods along the north-eastern and south-western boundaries of Group II, but not always coincident with those boundaries. It is very likely that metamorphic and structural differences between Groups I, II and III/IV are due to heat dissipation and slip along Unit 5 horizons.

## GROUP III:

Unit 4. Impure marble and very limy phyllite with early foliation transposed parallel to the later foliation.

Unit 3. Actinolitic schist and gneiss. Actinolite needles are randomly oriented on the foliation surfaces, which are parallel to the later foliation.

Unit 2. Chloritic schist and phyllite with pervasive secondary foliation.

Unit 1. Coarse quartzose phyllite ("semi-schist") with abundant quartz rodding. Quartz rods are the remnant noses of rootless isoclinal folds in vein quartz injected along or "sweated out" along the early foliation. The later foliation is almost pervasive, but rare relic microlithons showing the earlier foliation can be found.

## GROUP IV:

Unit D. Interbanded marble and calcite-diopside-quartz gneiss, with early gneissic banding.

Unit C. Calc-silicate gneisses comprising:

Unit Ca. White, sugary-textured diopside-quartz gneiss.

Unit Cb. Green to black and white banded gneiss. White bands are of Unit Ca, green to black bands are of tremolite/actinolite-graphite-quartz gneiss.

Unit Cc. Grey and buff banded gneiss, as Cb, and blocky grey biotite-quartz phyllite, some with quartz rodding, with very planar, pervasive second foliation (compare Unit Ba, contrast Unit 1).

Unit Cd. Black biotite-albite-graphite-quartz gneiss. Biotite is both aligned parallel to the foliation and cross-cutting foliation as late poikilitic books. New albite is overprinting a fine foliation in graphite and appears black in hand-specimen.

Unit B. Muscovite-biotite phyllite and schist with an extremely planar pervasive cleavage, axial planar to tight folds in quartz veins, which is overgrown by very large (up to eight inches long), prismatic andalusite porphyroblasts with graphite inclusions and also by smaller biotite porphyroblasts.

Unit Ba. Biotite-quartz phyllite with blocky weathering, as Cc.

Unit A. Quartz-muscovite-biotite (garnet - staurolite) schist. Quartz veins forming the only vestige of the early foliation are folded in close to tight folds, in contrast with the rootless isoclinal folds of Unit 1. This indicates that although the metamorphic grade of Unit A is higher, Unit 1 may have suffered a greater, post-early-foliation strain.

Unit Aa. Black muscovite-biotite-albite-graphite-quartz schist, compare Unit Cd.

#### INTRUSIVE ROCKS:

Unit G. Foliated medium-grained granodiorite/quartz-monzonite and altered granitic material. Foliation is best developed near the contact with the country rock schists and gneisses, but almost always observable within the mapped area. Locally the foliation is kinked and lineated in directions consistent with structures in the host rocks. Granitic dykes near the contact are folded in cusped folds of the same orientation as folds in quartz veins in the surrounding schists, and the pervasive schistosity of the latter is seen to be refracted passing through the dykes. Some dyke material may be more strongly folded and cross-cut by later cusped, less altered dykes. In thin section the rock is badly strained with much sub-grain development in quartz and undulose extinction. Some biotite and quartz has suffered metamorphic recrystallization as evidenced by the parallel orientation of platy non-euhedral biotite and elongate quartz. However, thick books of oriented euhedral biotite, granular quartz and oriented euhedral zoned plagioclase indicate mechanical orientation and crystallization from a melt. Muscovite is usually in very coarse books of random orientation, or on vein surfaces, and is evidently a late, hydrothermal product. The above evidence may indicate that the intrusive was emplaced at a late stage in the deformation and metamorphism which produced the pervasive later cleavage in the host schists. Argon-retention ages on the schists and the intrusive are 90-95 m. y. whereas emplacement is dated by combined field and radiometric methods as before 100 to 117 m. y. (op. cit., 1972). Hence the deformation and metamorphism that produced the later foliation in the Anvil Range metamorphic pile must be, in part at least, Mesozoic rather than Cambro-Ordovician (op. cit., 1972).

Unit H. Hornblende-plagioclase porphyry. Dykes of altered andesitic porphyry of consistent 060° trend cut the batholith and adjacent host rocks. Hornblende is altered to chlorite, epidote, quartz and opaques, plagioclase to epidote, albite and quartz, and apatite is a minor constituent.

Unit P. Aplite. One dyke of sugary-textured felsic intrusive was noted in a swarm of Unit H dykes.

In summary, the mapped rocks consist of metamorphosed Palaeozoic sediments and volcanics with an overall increase in volcanic material to the north-east, and limy sediments to the south-west abutting against a Mesozoic granitic batholith. Deformational and metamorphic intensity increases to the south-west.

### Structure

Outcrops of Group II phyllite, Unit 6, often show a planar crenulation foliation which is in turn crenulated in two statistically separate directions and kinked in a third separate direction. Such outcrops allow a classification of structural elements as follows:-

$S_1$  - the pervasive early foliation

$S_2$  - the later, crenulation, foliation

$F_2$  - the axial directions of the crenulations of  $S_1$ , usually given by the intersection of  $S_1$  and  $S_2$

$F_3, F_4$  - the axial directions of crenulations on or of  $S_2$

$F_5$  - the axial direction of the kinking

$D_{1-5}$  - the deformations giving rise to linear elements  $F_{1-5}$  and planar elements  $S_{1-5}$

Rocks of Group I have  $S_1$  dominant, and weak  $S_2$  is seen to be axial planar to gentle to open, steeply inclined to upright folds of sub-horizontal plunge ( $F_2$ ). (Note: fold descriptive terms are after Fleuty, 1964.)  $S_1$  is seen to be axial planar to recumbent buckle folds with sub-horizontal plunge ( $F_1$ ) and highly sheared limbs rich in orange carbonate. Thrusting is believed to have occurred along these sheared zones.

$D_2$  folds become tighter to the south-west. In Group II a close to tight antiform in greenstone is traceable for the length of the property and towards the boundary with Group III major  $D_2$  folds probably become isoclinal and recumbent, still with sub-horizontal plunge.

The relative timing of crenulations on  $S_2$  is unknown. Both are locally associated with larger structures.  $D_3$  folds are asymmetric, having shorter western limbs, but this asymmetry is not apparently associated with any regional  $D_3$  structure.

Large  $D_4$  folds result in the overturning of  $S_2$  near the batholith. These folds have axial planes of variable dip from horizontal to vertical, and are probably cascade folds off the Anvil Arch, which is presumably a regional  $D_4$  structure.

$D_5$  is assumed to be the latest deformation due to its brittle nature, and the uniform orientation of  $F_5$ .

Orientation data for structural elements can be summarized as follows:

Group I:

- $F_1$  - no preferred orientation, sub-horizontal plunge
- $S_1$  - sub-horizontal
- $F_2$  -  $320^\circ \pm 20^\circ$ , sub-horizontal doubly plunging
- $S_2$  -  $320^\circ \pm 20^\circ$ , dipping  $30-60^\circ$  north
- $F_3, S_3$  - not measurable
- $F_4, S_4$  - not measurable
- $F_5$  -  $060^\circ \pm 10^\circ$ , sub-horizontal to northerly plunging
- $S_5$  - sub-vertical

Groups II, III, IV:

- $F_1, S_1$  - not measurable statistically
- $F_2$  -  $320^\circ \pm 20^\circ$ , sub-horizontal doubly plunging
- $S_2$  -  $320^\circ \pm 20^\circ$ , dipping  $0-30^\circ$  north (before later modification)
- $F_3$  -  $350^\circ \pm 30^\circ$ , variable northerly plunge
- $S_3$  - sub-vertical
- $F_4$  -  $320^\circ \pm 20^\circ$ , sub-horizontal doubly plunging
- $S_4$  - sub-horizontal to  $320^\circ \pm 20^\circ$ , vertical dip
- $F_5$  -  $060^\circ \pm 10^\circ$ , variable northerly plunge
- $S_5$  - sub-vertical

Three fault sets have been inferred from the mapping:-

1. The syn-D<sub>1</sub> thrusts and shears in Group 1, discussed above.
2. High angle to vertical faults, trending north - north-west in the plane of S<sub>3</sub> and associated with D<sub>3</sub> folds, apparently with the eastern block generally down faulted, and minor displacements.
3. North-easterly trending faults and fractures, of minor displacement, very evident in the drainage of the map-area and surrounds.

On the southern flank of the Arch, the Rose and Vangorda Creek Faults may be related to the syn-D<sub>1</sub> thrusts, whereas the Blind Creek and Faro No. 1 faults are examples of the north-easterly trending set.

In addition, movement has probably occurred on the graphitic horizons during deformation. This may account for the lack of Group III rocks on the South-East Ridge in the map-area.

In summary, the structural history of the rocks described is the same as that described for the Anvil Mine open pit - two intense deformations giving a more or less flat-layered metamorphic pile, which has subsequently been arched and wrinkled by later stresses. D<sub>2</sub> and D<sub>4</sub> are considered equivalent in part i. e. when S<sub>2</sub> was forming in Group I it was probably being folded in Group IV. D<sub>1</sub> and D<sub>2-4</sub> show very rapid changes in intensity and associated metamorphism across strike - D<sub>1</sub> probably because of D<sub>2-4</sub> effects. D<sub>3</sub> is only locally important and D<sub>5</sub> effects can be ignored.

### Metamorphism

Three periods of metamorphism are recorded in pelitic and calcareous rocks:-

1. Probable Permo - Pennsylvanian formation of a pervasive primary fabric ranging from a gneissic banding in calcareous rocks and coarse schistosity in pelites in the south-west to a slaty cleavage in pelites in the north-east.
2. Recrystallization of micas along an initially mechanically formed crenulation foliation of probable Cretaceous age. Amphibolite facies (staurolite, garnet) in the south-west decreasing rapidly to the north-east, where it is absent.
3. Cretaceous overprinting of 2. above with biotite, andalusite and albite porphyroblasts, often with preferred orientations of unknown significance. Radiometric dating by K-Ar methods probably record only this event, with argon retention at 100 - 80 m. y. The effect is confined to the south-west.

Note re sections: Stratigraphy, Structure and Metamorphism

The main differences between the two mapped sheets are as follows:-

- Sheet 1: a) Well developed Groups I and III rocks - poorly developed to absent on sheet 2, which has well developed Group IV.
- b) Presence of Units P, H, 8v, 8p, 6s and Group III rocks (1, 2, 3, 4) and absence of Units 7t, 6b and B - vice versa on sheet 2.
- c) Apparent dislocation between Groups I and II, absent on sheet 2.
- d) Very uniform orientation of D<sub>5</sub> elements and locally well developed D<sub>3</sub> structures, in contrast to better definition of D<sub>1</sub> and D<sub>4</sub> structures on sheet 2.

Mineralization

Two phases of Pb-Zn-Cu sulphide mineralization are noted:-

1. Pre-D<sub>1</sub>, hence probably pre-Permo - Pennsylvanian, and probably syngenetic and volcanogenic.
2. Probable Upper Cretaceous/Early Tertiary hydrothermal veins.

The early phase is represented on the Property by occurrences of copper (chalcopyrite and carbonates) in massive basic volcanics; of copper-zinc (chalcopyrite and carbonates, sphalerite and oxidation products) in more acid? volcanics, breccias and tuffs, and of zinc? (zincian oxides?) in graphitic phyllite. Lead mineralization is noticeably lacking in these showings.

The later phase is represented by coarse galena-bearing quartz veins with apparently little or no accompanying metal present. These veins trend approximately 060° and parallel hornblende porphyry dykes, tensional fissuring noted on outcrop scale and D<sub>5</sub> structural elements. They are discrete local features and are considered very unlikely to have formed an economic stockwork. The source of metal may be either remobilization of the early phase mineralization by magmatic activity or fractionation from the porphyritic phase of the Anvil Batholith. Pre-D<sub>3</sub>? and pre-D<sub>2</sub> quartz veins are barren and hence the latter source may be dominant.

There is apparently a correlation between known deposits and greenstones, calc-silicates (?) and graphitic phyllites (op. cit., 1972). Greenstones are considered as possible source rocks whereas graphitic rocks indicate a reducing environment suitable for sulphide deposition. As such, graphitic horizons are considered to be a better exploration guide

(there seems to be some doubt as to whether gneisses exposed in the Anvil Pit are metamorphosed calcareous sediments or volcanic material). However graphitic rocks are very common in the metamorphic pile and have high background metal content - hence geological exploration criteria are very broad and need support from geochemical, electromagnetic, magnetic, and gravity surveys.

### CONCLUSIONS AND RECOMMENDATIONS

1. The map-area and its strike extensions are concluded to have high potential for Pb-Zn-Cu mineralization.

2. Geological, geochemical (soil), electromagnetic and magnetometer surveys should provide a basis for exploration within the map-area, outlining targets to be tested by gravity survey and drilling.

3. Geological exploration criteria are:

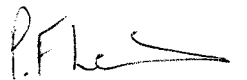
a) localization of mineralization in quartzose phyllite, in or near graphitic phyllite, near greenstone, amphibolite or calc-silicate gneiss units

b) localization of mineralization in D<sub>2</sub> fold noses.

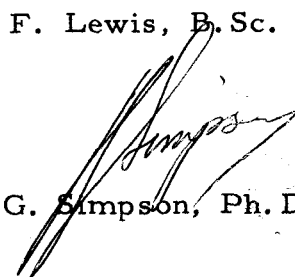
4. Stratigraphic and structural summaries are presented at the ends of the pertinent sections (pp 12 and 14 respectively).

5. The geochemical anomaly staked as TAF 1-12 was probably glacially transported to its present site from hydrothermal vein mineralization to the south.

Respectfully submitted,



P. F. Lewis, B. Sc.



J. G. Simpson, Ph. D., P. Eng.

February, 1973

**APPENDIX I**

**Statement of Expenses and Invoices**

APPENDIX I

Statement of Expenses and Invoices

Salaries

J. G. Simpson (Supervisor) 2 days @ \$100/day	\$ 200.00
P. F. Lewis (Geologist) 1 month @ \$1,100/month	1,100.00
D. J. Londry (Geological Assistant) 2/3 month @ \$650/month	433.00

Camp Costs

40 man-days @ \$10.00/day	400.00
---------------------------	--------

Helicopter Charter

Trans-North Turbo Air 4 hrs. @ \$155/hr.	620.00
Canwest 1.5 hrs. @ \$145/hr.	217.50

Thin Sections

10 @ \$4.00	40.00
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Report Preparation

100.00

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Total - \$3,110.50

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# TRANS NORTH TURBO AIR LTD.



BOX 4338      PHONE 668-2177  
WHITEHORSE, YUKON

TO:

Kangaroo Exploration Corp.  
#1101 - 510 West Hastings Street  
Vancouver 2, B.C.

CHARGE TO  
460/3129

DATE      July 31, 1972

INVOICE NO      A686-2

P.O. NO      1317

TO:      Charge you with the charter of  
Bell 47G-3B-1 Helicopter CF-RLP  
Pilot: R. Warsofsky

FLYING:      July 4, 21, 26, 27 & 30, 1972  
Daily Flight Report Nos. 6574, 6578,  
6579, 6582 & 8087

6.3 hours at \$155.00 per hour      \$ 976.50  
(Rate when carrier supplies fuel)

PLUS:      Excess cost of fuel at Faro  
Charterer assessed with cost  
of fuel over \$.60 per gallon  
  
113 gallons at \$.57 per gallon

64.41

PLUS:      Taxi at Faro

1.50

INVOICE TOTAL

\$1,042.41

*W*



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# TRANS NORTH TURBO AIR LTD.



BOX 4333      PHONE 668-2177  
WHITEHORSE, YUKON

TO:    
Cyprus Exploration Corp. Ltd.  
1101 - 510 West Hastings Street  
Vancouver 2, B.C.

466/3129

DATE      August 31, 1972

INVOICE NO      A1001-2

P.O. NO      1319

TO:      Charge you with the charter of  
Bell 47G-3B-1 Helicopter CF-RLF  
Crew: R. Warsofsky and J. Anderson

FLYING:      August 2, 4, 5 & 10, 1972  
Daily Flight Report Nos. 6591 - 6594

4.3 hours at \$155.00 per hour      \$666.50  
(Rate when carrier supplies fuel)

PLUS:      Excess cost of fuel at Fare  
Charterer assessed with cost  
of fuel over \$.60 per gallon

77 gallons at \$.57 per gallon      43.89

INVOICE TOTAL      \$710.39

✓  
Jan

RECEIVED  
SEP - 6 1972  
RECEIVED







*Camwest Air Services Ltd.*  
NO. 4 HANGAR  
CALGARY INTERNATIONAL AIRPORT  
CALGARY, ALBERTA, T2E 2G3

No 1408

August 31, 1972

**INVOICE**

**Kangaroo Exploration Ltd.,  
1101 - 510 - West Hastings St.,  
Vancouver, B.C.**

**P.O. No. 1321**

*Handwritten notes:*  
209  
209

DATE	FLIGHT: PASSENGER DETAILS	FUEL & OIL	TOTAL FLIGHT HOURS HOURS - MINUTES	RATE	TOTAL
Aug. 17	<b>Flight Report E 158</b>  <b>Flight Report Attached</b>	x	3.5 ✓	145.00	\$507.50

**RECEIVED**  
SEP - 5 1972  
**RECEIVED**

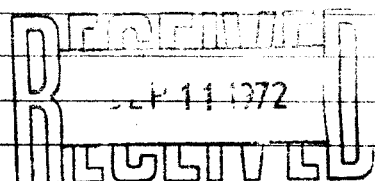
## DAILY FLIGHT REPORT

### CANWEST AVIATION LTD.

DATE Aug 17-72 A/C 4BX  
 CHARTER  CONTRACT   
 CUSTOMER Kennecott Exploration Corp  
 ADDRESS 1101 5th Street West, Fairbanks, Alaska  
 PROJECT Therapeutic 2 B/C

FLIGHT/PASSENGER DETAILS	Fuel Supplied By		HRS.	MIN.
	CAN - WEST	CUST.		
<u>Fuel on board mechanic</u>	<input checked="" type="checkbox"/>		<u>3</u>	<u>15</u>
<u>LPD 1521</u>				
<u>1.5</u>				
<u>2.0</u>				
PILQT'S SIG. <u>[Signature]</u>	TOTAL FLT. HRS.		<u>3</u>	<u>15</u>
CUSTOMER SIG. <u>[Signature]</u>	TOTAL CONTRACT HOURS			
MTCE. ENG. <u>[Signature]</u>	FUEL			

SPECIAL REMARKS \_\_\_\_\_


  
 SEP 11 1972

INVOICE

Coots-Coddington Petrographic Service

96 West Pender St. • Vancouver, B.C.

Telephone: 683-3610

CHANGE THE  
460/3127

PURCHASE ORDER No. 1042

DOCKET W.O. No. \_\_\_\_\_

DATE Feb 7 / 73

CYPRUS Exp

683-9304

Quantity	DESCRIPTION	Price	Total
10	Thin Section	24.00	240.00
			<del>240.00</del>
			<del>240.00</del>

Pd by Gregg Wilson  
21-2-73

## **APPENDIX II**

### **References**

## APPENDIX II

### References

#### PREVIOUS ASSESSMENT REPORTS SUBMITTED BY KANGAROO EXPLORATION CORPORATION

- 1971 - Report on a Geochemical Survey and Diamond Drilling Program on the Mount Mye Property, by I. Turnbull and J. G. Simpson.
- 1972 - A Geochemical Report on the KD, AC, and a portion of the MX Claims, by J. B. P. Sawyer and G. A. Jilson.

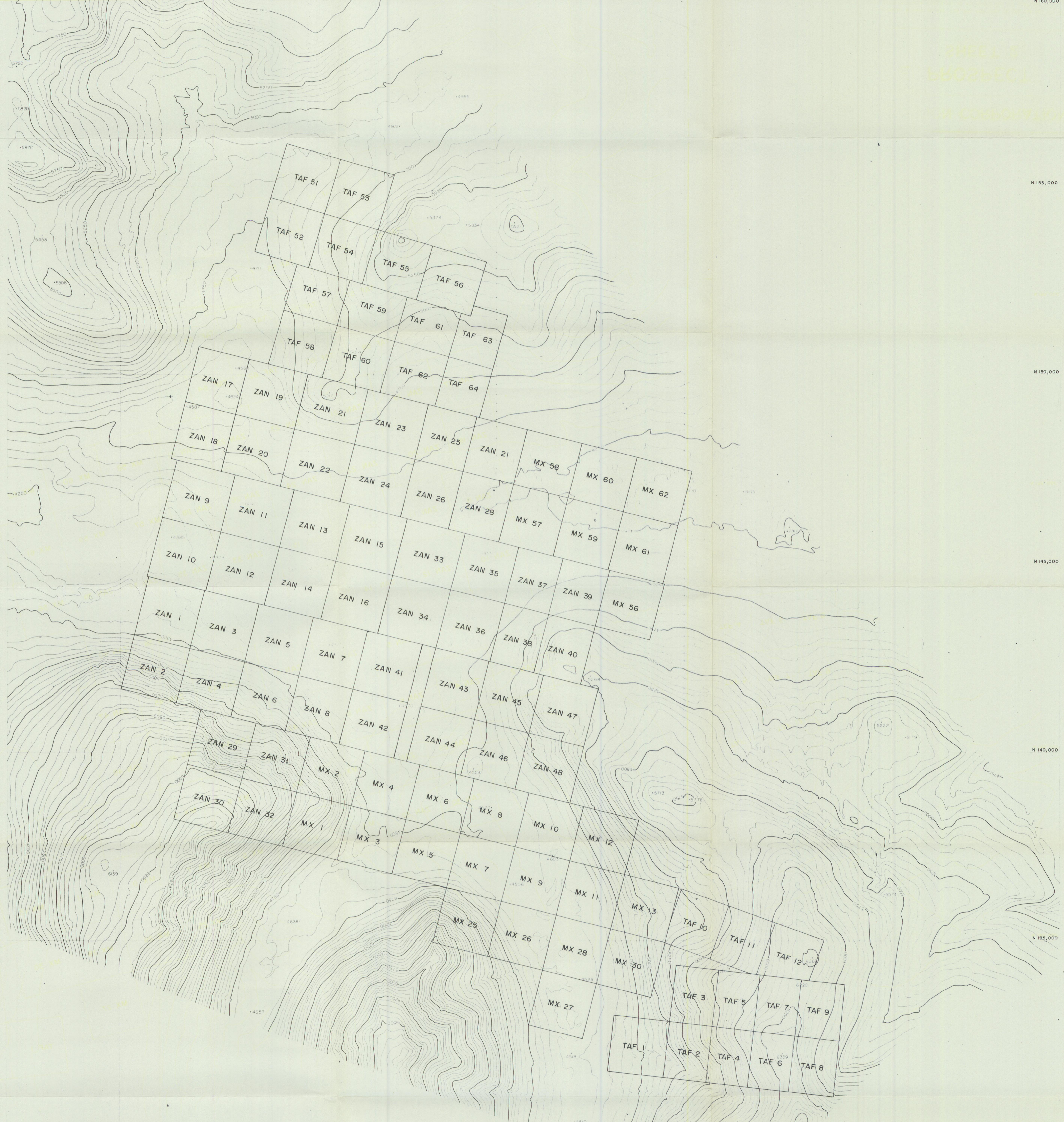
#### GEOLOGICAL SURVEY OF CANADA PUBLICATIONS

- 1961 - Map 13-1961 - Tay River, Yukon Territory, Sheet 105K, by J. A. Roddick and L. H. Green.
- 1968 - Geological setting of the Faro, Vangorda and Swim Base Metal Deposits, Yukon Territory (105K), by D. J. Tempelman-Kluit, in "Report of Activities" Paper 68-1A.
- 1969 - Anvil - Vangorda District, Yukon (105K), by D. J. Tempelman-Kluit, in "Report of Activities" Paper 69-1A.
- 1972 - Geology and Origin of the Faro, Vangorda and Swim Concordant Zinc-Lead Deposits, Central Yukon Territory, by D. J. Tempelman-Kluit, Bulletin 208.

#### OTHER

- 1964 - The Description of Folds, by M. J. Fleuty, Geol. Assoc. Proc. 75, pp 461-492.

SHEET 2  
PROSPECT  
IN COMPLETION



**KANGAROO EXPLORATION CORPORATION**

**MOUNT MYE PROSPECT**

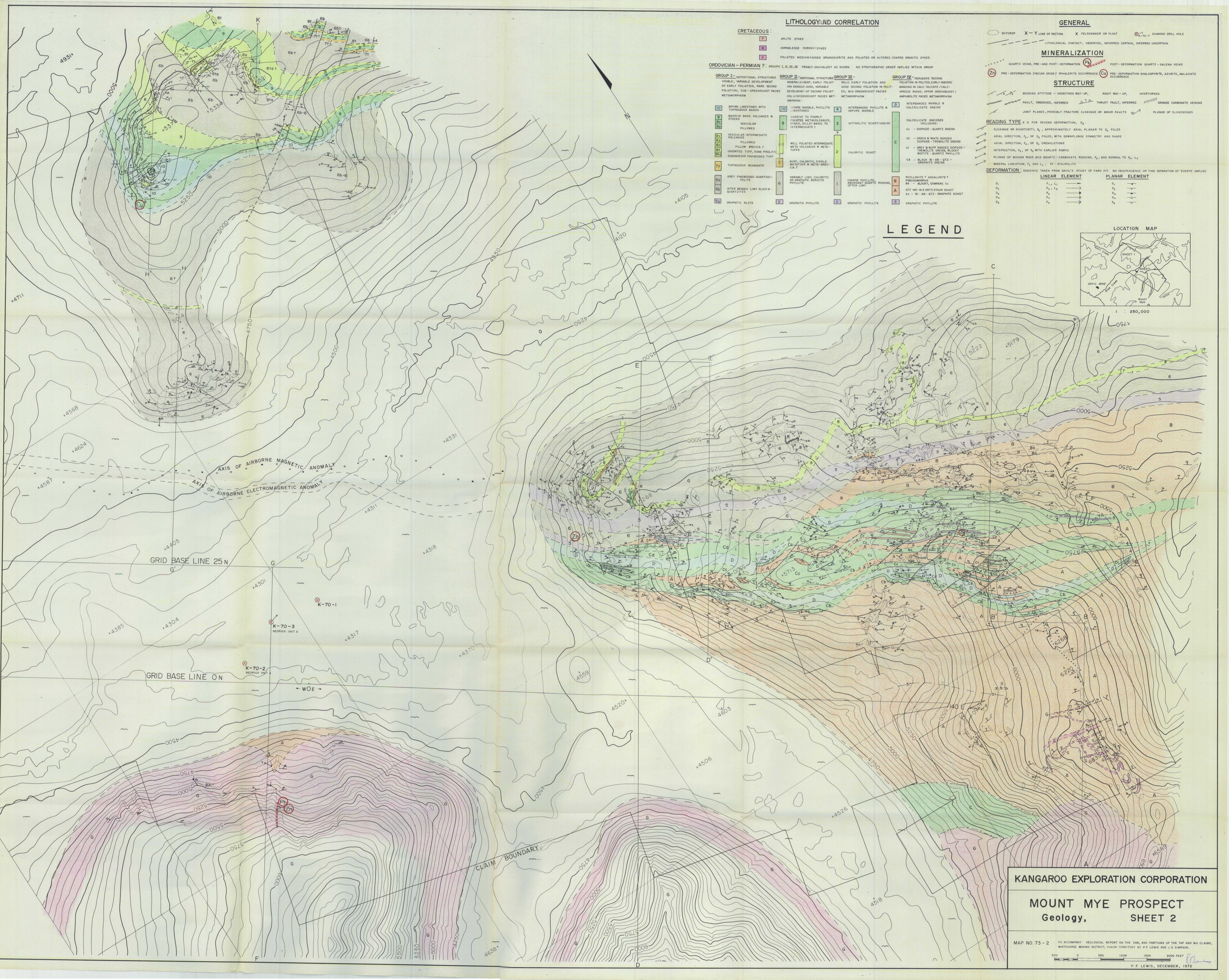
**CLAIMS, SHEET 2**

MAP NO. 73-1

TO ACCOMPANY: GEOLOGICAL REPORT ON THE ZAN, AND PORTIONS OF THE TAF AND MX CLAIMS, WHITEHORSE MINING DISTRICT, YUKON TERRITORY BY P. F. LEWIS AND J. G. SIMPSON.

1000 0 1000 2000 3000 4000 FEET

COMPILED BY P.F.L., FEB. 1973



**LITHOLOGY AND CORRELATION**

**CRETACEOUS:**

- P APLITE DYKES
- H HORNBLende PORPHYRY DYKES
- G FOLIATED MEDIUM-GRAINED GRANODIORITE AND FOLIATED OR ALTERED COARSE GRANITIC DYKES

**ORDOVICIAN - PERMIAN? GROUPS I, II, III, IV** (PROBABLY EQUIVALENT AS SHOWN. NO STRATIGRAPHIC ORDER IMPLIED WITHIN GROUP)

**GROUP I - DEPOSITIONAL STRUCTURES**  
VISIBLE, VARIABLE DEVELOPMENT OF EARLY FOLIATION, RARE SECOND FOLIATION; HIGH-GREENSCHIST FACIES METAMORPHISM

**GROUP II - REGIONAL STRUCTURE**  
GENERALLY EARLY FOLIATION, GOOD SECOND FOLIATION IN PELTITES; MID-GREENSCHIST FACIES METAMORPHISM

**GROUP III - RELIC EARLY FOLIATION AND GOOD SECOND FOLIATION IN PELTITES; MID-GREENSCHIST FACIES METAMORPHISM**

**GROUP IV - PERVASIVE SECOND FOLIATION IN PELTITES; EARLY GNEISS BANDING IN CALC-SILICATE / CALC-AROSE; MIDDLE UPPER GREENSCHIST / AMPHIBOLITE FACIES METAMORPHISM**

**10** MARINE LIMESTONES WITH TUFFACEOUS BANDS

**9** MASSIVE BASIC VOLCANICS & STOCKS

**8** VESICULAR FOLLOWS

**7** VESICULAR INTERMEDIATE VOLCANICS

**6** FOLLOWS

**5** UNSORTED TUFF, SOME PISOLITIC SUBAQUEOUS FINE-BEDED TUFF

**4** TUFFACEOUS SEDIMENTS

**3** GREY FINE-BEDED QUARTZITE FELTIC

**2** INTER-BEDED LIMY SLATES & QUARTZITES

**1** GRANITIC SLATE

**10** LIMBY MARBLE, PHYLITIC LIMESTONES

**9** MASSIVE TO POORLY FOLIATED METAVOLCANICS, DYKES, SILTIC BASIC TO INTERMEDIATE?

**8** WELL FOLIATED INTERMEDIATE META-VOLCANICS & METATUFFS

**7** BUT, CHLORITIC, POSSIBLE METATUFF & META-BRECCIA?

**6** VARIABLY LIMY, CHLORITIC OR GRANITIC SERICITE PHYLITIC

**5** GRANITIC PHYLITE

**4** INTERBANDING PHYLITIC & IMPURE MARBLE

**3** ACTINOLITIC SCHIST/GNEISS

**2** CHLORITIC SCHIST

**1** COARSE PHYLITIC, ABUNDANT QUARTZ RODDING, OFTEN LIMY

**5** GRANITIC PHYLITE

**4** INTERBANDING MARBLE & CALC-SILICATE GNEISS

**3** CALC-SILICATE GNEISS

**2** Cc - DIOPSIDE - QUARTZ GNEISS

**1** Cc - GREEN & WHITE Banded DIOPSIDE - TREMOLITE GNEISS

**1** Cc - GREY & BUFF Banded DIOPSIDE - TREMOLITE GNEISS, BLOCKY WHITE - QUARTZ PHYLITE

**1** Cc - BLACK BI-AB-Qtz - GRANITE GNEISS

**1** PHYLITIC P. ANDALUSITE? PSEUDOMORPH

**1** Bb - BLOCKY, COMPARE Cc

**1** Qtz - AB-BI-BE-DIOP-SCHIST

**1** Ab - BI - AB - Qtz - GRANITE SCHIST

**1** S GRANITIC PHYLITE

**GENERAL**

OUTCROP X-Y LINE OF SECTION X FELSIC MEMBER OR FLOAT X-72-7 DIAMOND DRILL HOLE

LITHOLOGICAL CONTACT, OBSERVED, INFERRED CERTAIN, INFERRED UNCERTAIN

**MINERALIZATION**

QUARTZ VEINS, PRE- AND POST- DEFORMATION (Pb) POST- DEFORMATION QUARTZ - GALENA VEINS

Zn PRE- DEFORMATION ZINCIAN OXIDE? SPHALERITE OCCURRENCE (Cu) PRE- DEFORMATION CHALCOPYRITE, AZURITE, MALACHITE OCCURRENCE

**STRUCTURE**

BEDDING ATTITUDE - UNDEFINED WAY-UP, RIGHT WAY-UP, OVERTURNED

FAULT, OBSERVED, INFERRED THRUST FAULT, INFERRED

JOINT PLANES, POSSIBLY FRACTURE CLEAVAGE OR MINOR FAULTS

PLUNGE OF SLICKENSIDES

**READING TYPE** E. G. FOR SECOND DEFORMATION, D<sub>2</sub>

CLEAVAGE OR SCHISTOSITY, S<sub>2</sub>, APPROXIMATELY AXIAL PLANAR TO D<sub>2</sub> FOLDS

AXIAL DIRECTION, F<sub>2</sub>, OF D<sub>2</sub> FOLDS, WITH DOWNPLUNGE SYMMETRY AND SHAPE

AXIAL DIRECTION, F<sub>2</sub>, OF D<sub>2</sub> CRENULATIONS

INTERSECTION, F<sub>2</sub>, OF S<sub>2</sub> WITH EARLIER FABRIC

PLUNGE OF BOUEN RODS AND QUARTZ - CARBONATE RODDING, F<sub>2</sub>, AND NORMAL TO F<sub>2</sub>, L<sub>2</sub>

MINERAL LINEATION, F<sub>2</sub> AND L<sub>2</sub>; ST - STAUROLITE

**DEFORMATION** SEQUENCE TAKEN FROM ANVIL'S STUDY OF FARD PIT. NO INDEPENDENCE OR TIME SEPARATION OF 'EVENTS' IMPLIED

**LINEAR ELEMENT**

D<sub>1</sub> F<sub>1</sub>, L<sub>1</sub>

D<sub>2</sub> F<sub>2</sub>, L<sub>2</sub>

D<sub>3</sub> F<sub>3</sub>, L<sub>3</sub>

D<sub>4</sub> F<sub>4</sub>, L<sub>4</sub>

D<sub>5</sub> F<sub>5</sub>, L<sub>5</sub>

**PLANAR ELEMENT**

S<sub>1</sub>

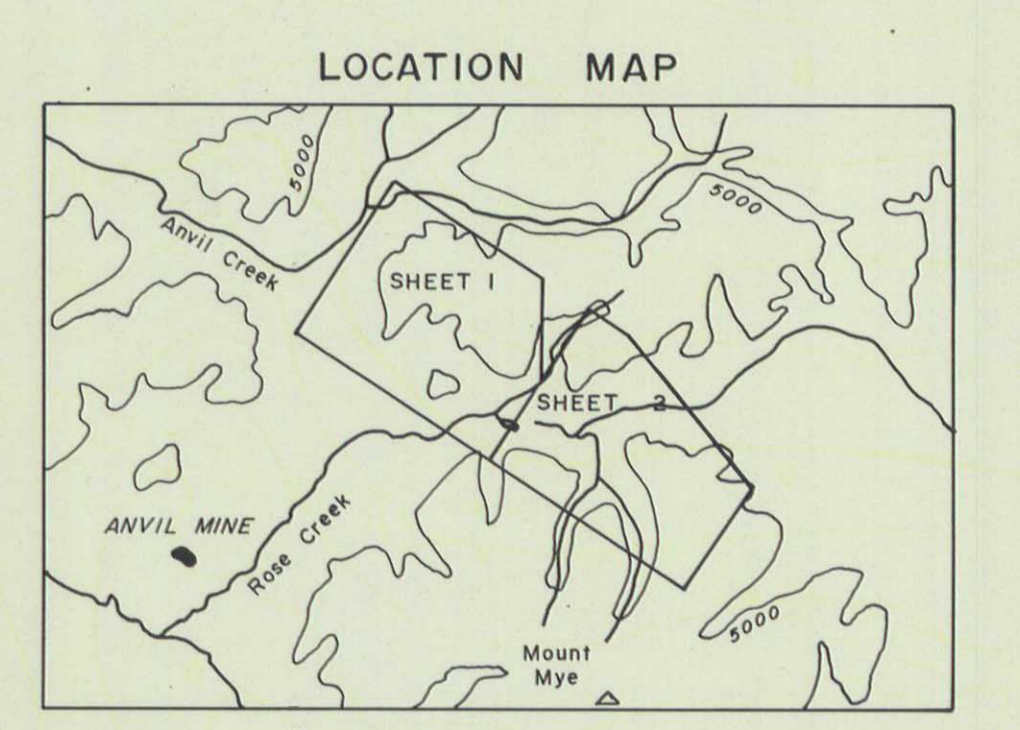
S<sub>2</sub>

S<sub>3</sub>

S<sub>4</sub>

S<sub>5</sub>

**LEGEND**



**KANGAROO EXPLORATION CORPORATION**

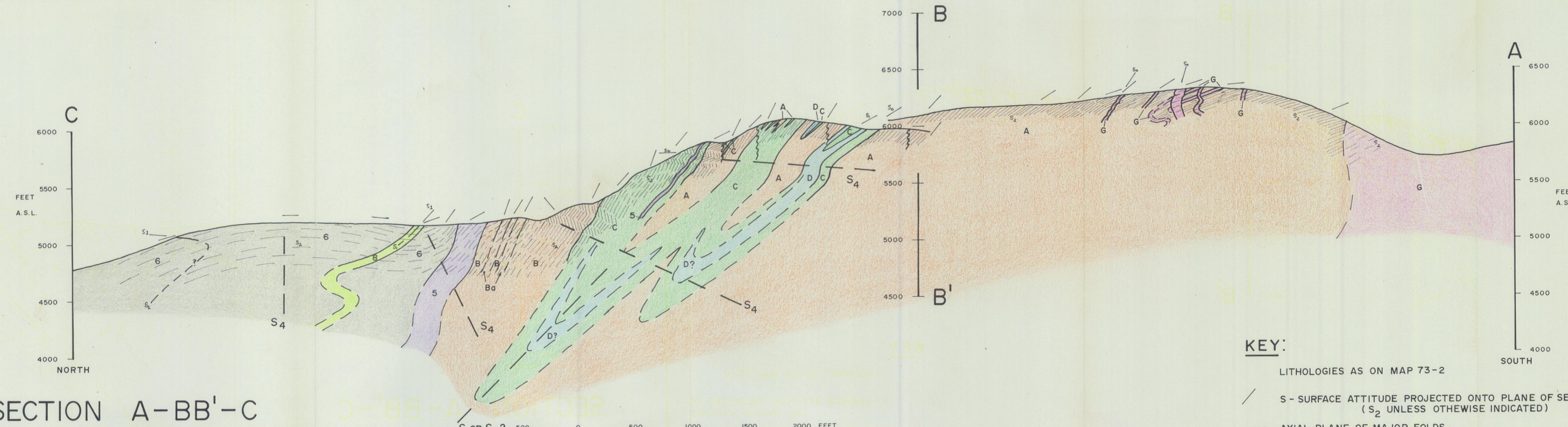
**MOUNT MYE PROSPECT**  
Geology,  
**SHEET 2**

MAP NO 73-2 TO ACCOMPANY: GEOLOGICAL REPORT ON THE ZAM, AND PORTIONS OF THE TAF AND MX CLAIMS, WHITEHORSE MINING DISTRICT, YUKON TERRITORY BY P. F. LEWIS AND J. G. SIMPSON.

Scale: 500 0 500 1000 1500 2000 FEET  
P. F. LEWIS, DECEMBER, 1972

# SECTION A-BB'-C

AZIMUTH 034°, MAGNETIC NORTH



### KEY:

- LITHOLOGIES AS ON MAP 73-2
- S - SURFACE ATTITUDE PROJECTED ONTO PLANE OF SECTION (S<sub>2</sub> UNLESS OTHERWISE INDICATED)
- AXIAL PLANE OF MAJOR FOLDS

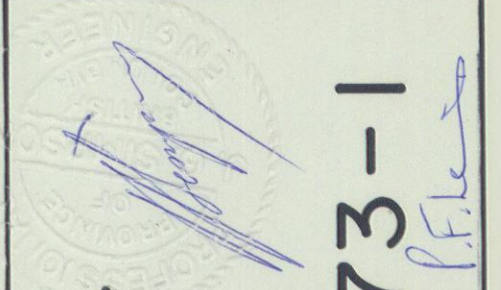
P. F. LEWIS, MARCH 1973

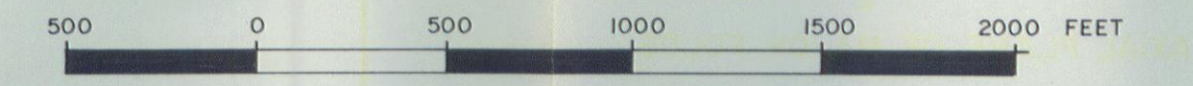
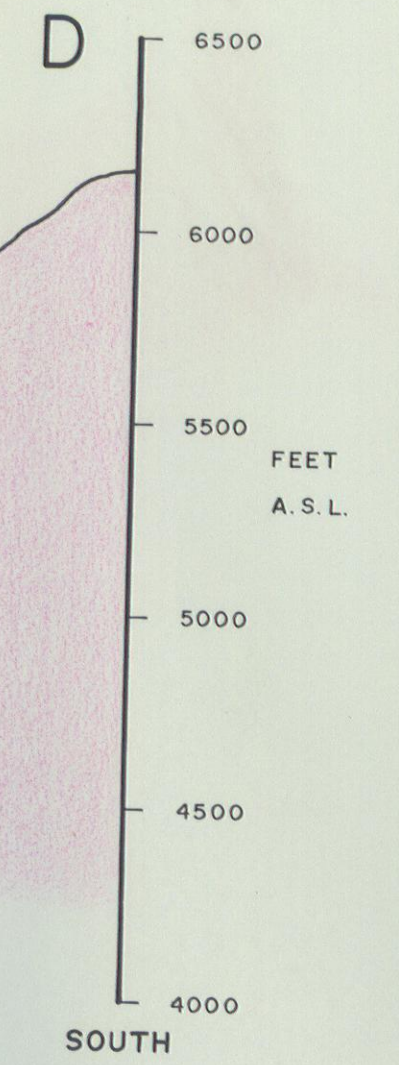
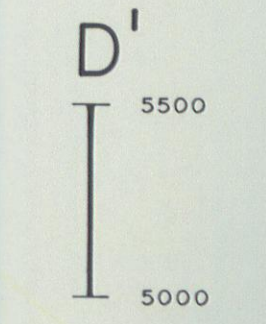
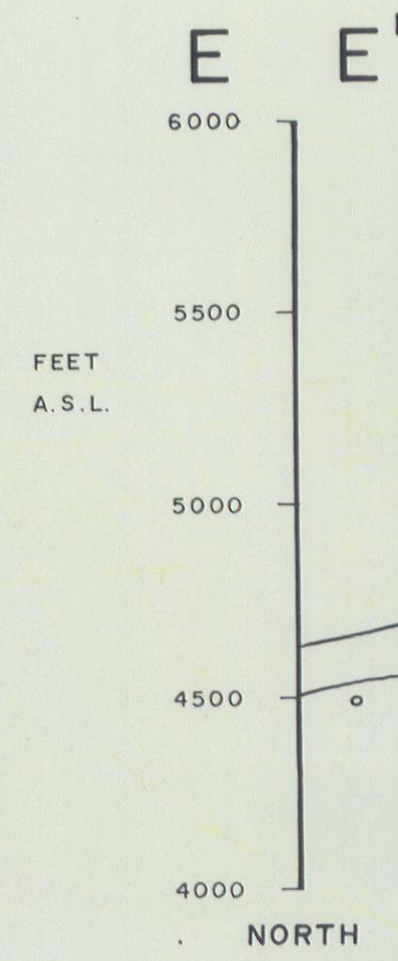
KANGAROO EXPLORATION CORPORATION

# MT. MYE PROSPECT

## SECTION 73-1

TO ACCOMPANY: GEOLOGICAL REPORT ON THE ZAN, AND PORTIONS OF THE TAF AND MX CLAIMS, WHITEHORSE MINING DISTRICT, YUKON TERRITORY. BY P. F. LEWIS AND J. G. SIMPSON



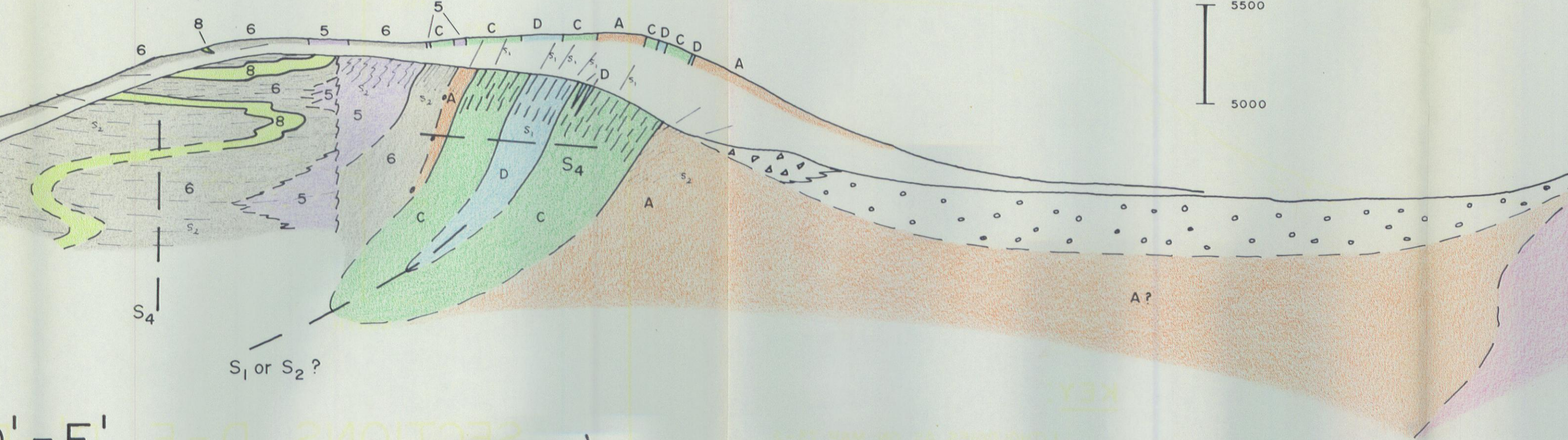


SECTIONS D-E, D'-E'  
 AZIMUTH 034°, MAGNETIC NORTH

P. F. LEWIS, MARCH 1973

**KEY:**

- LITHOLOGIES AS ON MAP 73-2
- S - SURFACE ATTITUDE PROJECTED ONTO PLANE OF SECTION (S<sub>2</sub> UNLESS OTHERWISE INDICATED)
- AXIAL PLANE OF MAJOR FOLDS

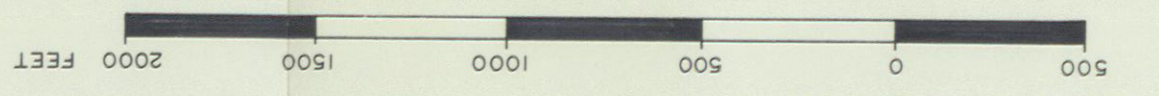


KANGAROO EXPLORATION CORPORATION

MT. MYE PROSPECT

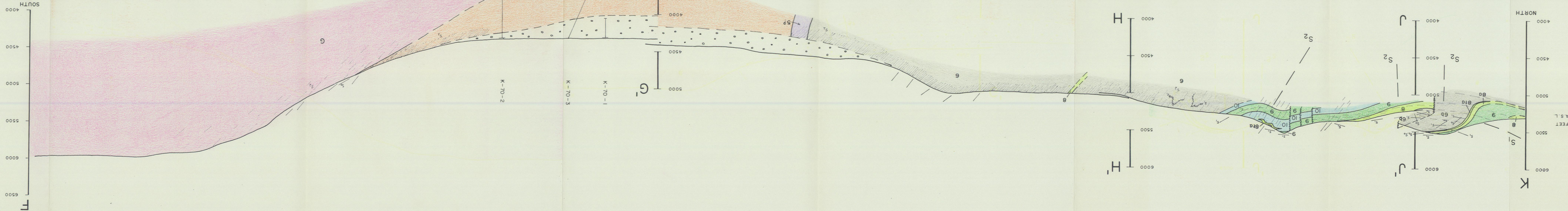
SECTION 73-2

TO ACCOMPANY: GEOLOGICAL REPORT ON THE ZAN, AND PORTIONS OF THE TAF AND MX CLAIMS, WHITEHORSE MINING DISTRICT, YUKON TERRITORY.  
 BY P. F. LEWIS AND J. G. SIMPSON



P. F. LEWIS, MARCH 1973

KEY:  
 - - - - - LITHOLOGIES AS ON MAP 73-2  
 / / / / / S - SURFACE ATTITUDE PROJECTED ONTO PLANE OF SECTION  
 - - - - - AXIAL PLANE OF MAJOR FOLDS  
 (S<sub>2</sub> UNLESS OTHERWISE INDICATED)  
 - - - - - S - SURFACE ATTITUDE PROJECTED ONTO PLANE OF SECTION



SECTION F-GG'-HH'-JJ'-K'-LL'-HH'-GG'-F  
 AZIMUTH 034°, MAGNETIC NORTH

KANGAROO EXPLORATION CORPORATION

MT. MYE PROSPECT

SECTION 73-3

TO ACCOMPANY: GEOLOGICAL REPORT ON THE ZAN, AND PORTIONS OF THE TAF AND MX CLAIMS, WHITEHORSE MINING DISTRICT, YUKON TERRITORY, BY P. F. LEWIS AND J. G. SIMPSON