



WELCOME NORTH MINES LTD. (N.P.L.)
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VANGORDA PROJECT

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

RAZ 1-182 CLAIM GROUP

Latitude 62°19'N

Longitude 133°02'W

N.T.S. 105K-6

WHITEHORSE MINING DISTRICT

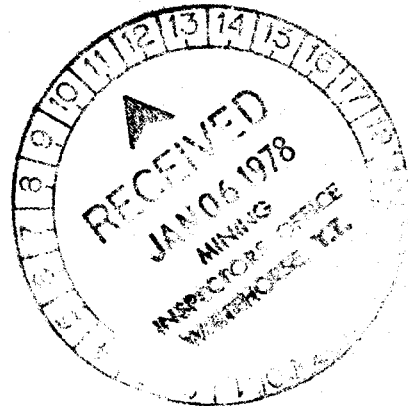
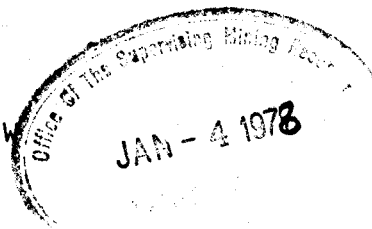
YUKON TERRITORY

Work Performed During the Period June 23 - December 19, 1977

by

F. Foster
R. Holland

December 19, 1977



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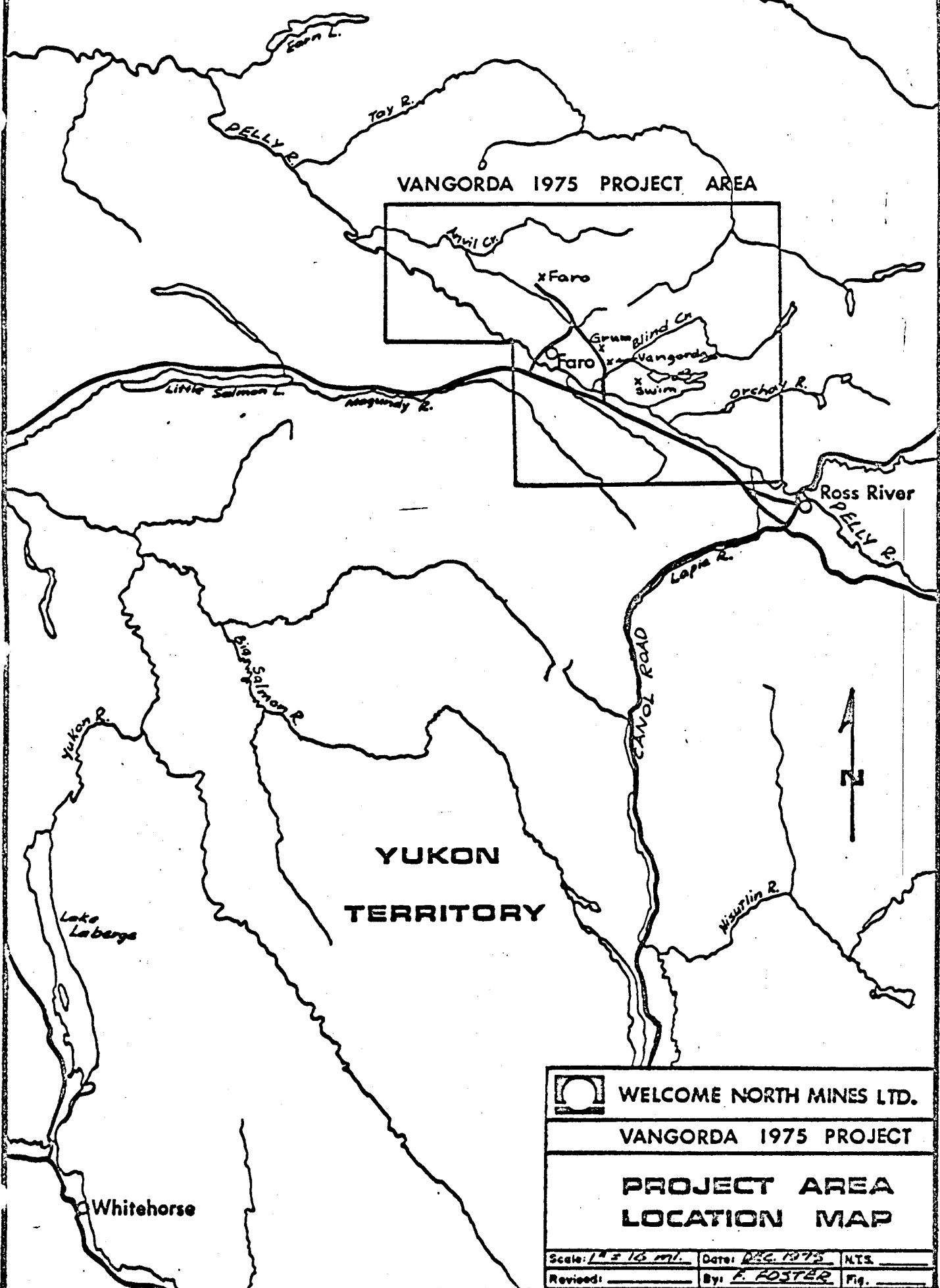
This report has been examined by the
Geological Survey and is hereby recom-
mended to the Board of Mineral Lands
and as recommended by the Board of
\$38,100.00

D.B. Craig

Geological
Section 52


B.R. Baxter

B. R. BAXTER
Supervising Mining Recorder



VANGORDA 1975 PROJECT AREA

YUKON TERRITORY

	WELCOME NORTH MINES LTD.		
VANGORDA 1975 PROJECT			
PROJECT AREA LOCATION MAP			
Scale: 1" = 16 mi.	Date: DEC. 1975	NTS	
Revised: _____	By: F. FOSTER	Fig. _____	

Whitehorse

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INTRODUCTION

The BAR 1-20 claims, previously held by the Vangorda '75 Project, were restaked as the RAZ 1-20 claims by Welcome North Mines in August, 1975 as part of the Vangorda '75 Project. Under the joint venture agreement, Getty Mining Pacific currently holds a 60 percent working interest in the property, with Welcome North as partner with a 40 percent carried interest.

The property was located over what was considered to be a favourable geologic environment for Anvil-Vangorda massive sulphide deposits.

Welcome North, as operator, during the period August 1, 1976 to August 25, 1976 carried out an exploration program consisting of linecutting, geological mapping, soil, silt, and rock geochemical surveys.

Following compilation of the data accumulated, further staking was conducted during December, 1976, when 160 claims were tied on to the existing 20 claims.

Further work was carried out by Welcome North Mines, as operator, during the 1977 field season. This work included further linecutting and grid geochemical surveys, regional geological mapping and geochemical surveys of the new claims, as well as magnetometer and Max-Min II surveys of the grid area. In addition two diamond drill holes were completed in August, 1977.

MINERAL CLAIMS

The RAZ 1-182 claim group consists of the following 147 contiguous mineral claims located in the Whitehorse Mining District of the Yukon Territory (see Fig. 1).

<u>CLAIMS</u>	<u>GRANT NUMBERS</u>	<u>RECORDING DATE</u>
RAZ 1- 20	YA3424-YA3443	Sept. 2, 1975
RAZ 25- 34	YA8452-YA8461	Dec. 30, 1976
RAZ 39- 48	YA8466-YA8475	Dec. 30, 1976
RAZ 52- 99	YA8479-YA8526	Dec. 30, 1976
RAZ 101	YA8528	Dec. 30, 1976
RAZ 103	YA8530	Dec. 30, 1976
RAZ 105	YA8532	Dec. 30, 1976
RAZ 107	YA8534	Dec. 30, 1976
RAZ 109	YA8536	Dec. 30, 1976
RAZ 113-124	YA8539-YA8550	Dec. 30, 1976
RAZ 126-147	YA8552-YA8573	Dec. 30, 1976
RAZ 149-154	YA8575-YA8580	Dec. 30, 1976
RAZ 157-169	YA8583-YA8595	Dec. 30, 1976
RAZ 182	YA8607	Dec. 30, 1976

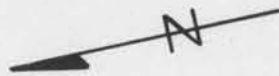
FAT Claims
Cyprus Anvil


ELLE Claims

WYNNE Claims
Vangorda



No work done, proposed
to let lapse



 WELCOME NORTH MINES LTD.		
VANGORDA 1976 PROJECT		
RAZ 1-109, 111-180 & 182 CLAIMS		
CLAIM LOCATION MAP		
Scale: 1" = 1/2 mi.	Date: Jan. 1977	NTS 105K-6
Revised: Dec. 1977	By: F. Foster	Fig. 1

SUMMARY

The RAZ claim group is of considerable economic and geological interest because it is covered with a significant amount of mineralized lead-zinc float. This float lies within an overburden-covered area believed to be underlain by Unit (11) granitic rocks near the contact with Unit (1) schists, the host rock for the nearby Anvil deposits.

The schists and overlying calc-silicate rocks of Unit (2) form a large south-dipping roof pendant within the granite which is traceable for several miles to the east and west. Diamond drilling of an E.M.-mag anomaly revealed a thick favourable graphitic-pyritic zone within this schist.

The geochemical surveys carried out in 1977 have extended the anomalous lead-zinc zone to the north and east, now covering an area approximately 10,500 feet by 14,000 feet, with possible further extension to the northeast and northwest. The anomalies appear to be due to high background values within the granite, possibly due to assimilation of an ore horizon at depth.

Recommendations for future work include extending the grid, more geophysical and geochemical surveys and possibly more diamond drilling.

LOCATION AND ACCESS

The RAZ 1-182 claims are located in the Whitehorse Mining District of the Yukon Territory (N.T.S. 105K-6) at latitude $62^{\circ}19'N$ and longitude $133^{\circ}02'W$, 125 miles northeast of Whitehorse, Yukon Territory and 12 miles northeast of the town of Faro (Fig. 2).

Access to the property can be gained by helicopter from Faro or the Anvil mine site situated 12 miles west of the property, in Rose Creek Valley.

The property is centered on a narrow alpine valley northeast of Mount Mye and includes the main peak of Mount Mye. Elevation varies from 5000 feet in the valleys to over 6700 feet at Mount Mye. Outcrop is restricted to sidehills, especially northwest-facing slopes, and ridge tops, with the valley bottoms being covered with glacial till and felsenmeer.

The property is above treeline with only buck brush and minor stunted black spruce in the lower valley bottoms.

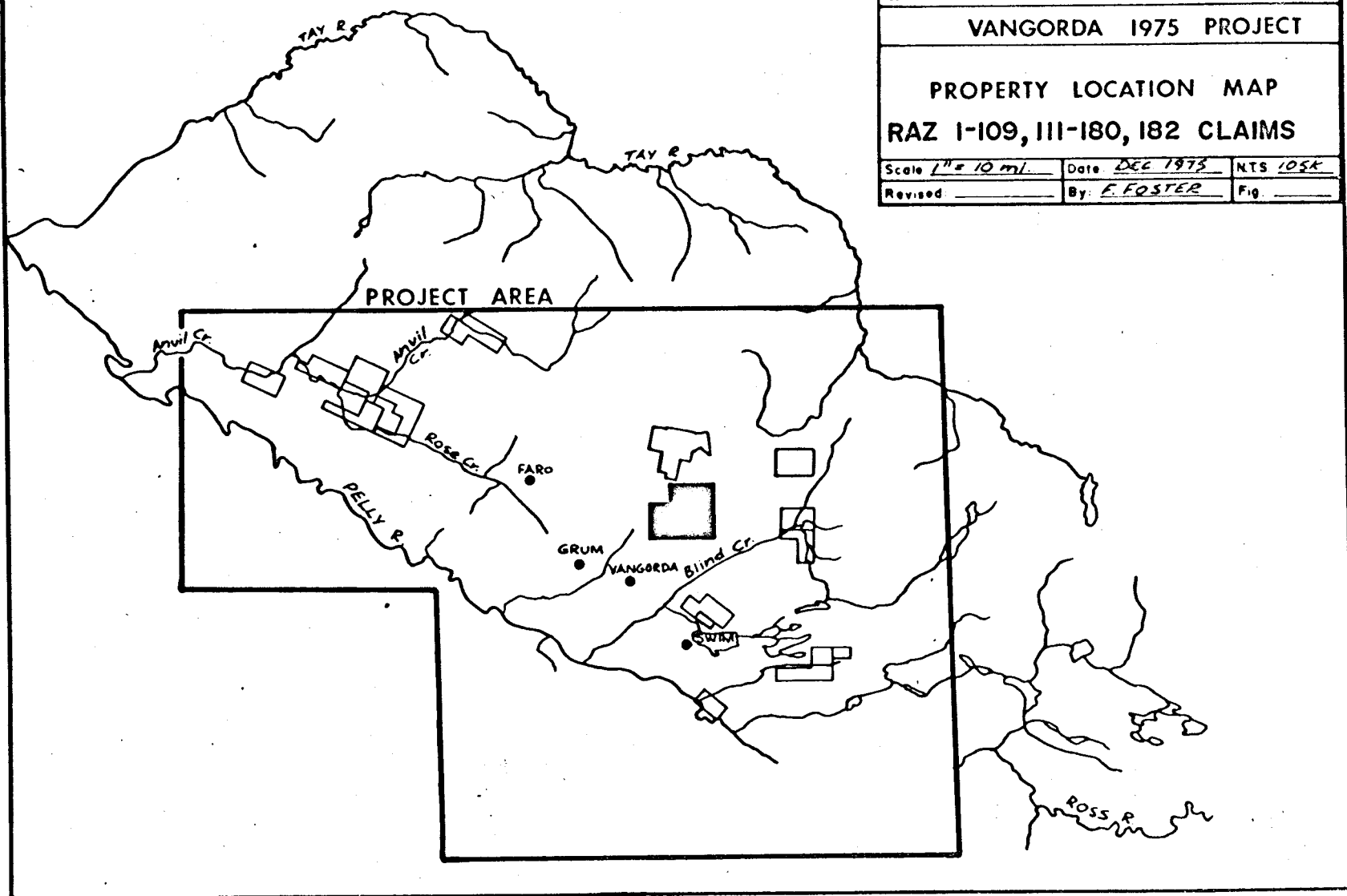


WELCOME NORTH MINES LTD.

VANGORDA 1975 PROJECT

PROPERTY LOCATION MAP
RAZ 1-109, 111-180, 182 CLAIMS

Scale <u>1" = 10 mi.</u>	Date <u>DEC 1975</u>	NTS <u>105K</u>
Revised _____	By: <u>F. FOSTER</u>	Fig. _____



REGIONAL GEOLOGY

The Anvil District, as outlined in Fig. 3, lies immediately northeast of the Tintina Trench, the probable locus of a major zone of northwest-southeast transcurrent faulting.

The central part of the district is formed by the Anvil Range, the dominating structure being a doubly plunging arch-like feature around the Anvil batholith. The core of the Anvil Range is underlain by granitic rocks for which potassium-argon age determinations suggest an age of 80-90 million years. The Anvil Arch is flanked on the southwest and northeast by phyllites, calc-silicate gneisses and schistose rocks thought to be of Cambrian (?) to Ordovician age; these metasediments which have undergone at least three phases of deformation are host to the known massive sulphide deposits of Faro, Vangorda, Grum, Swim and Dy.

The schistose quartz-rich host rocks of the Faro sulphide deposits are confined to the upper part of a unit of carbonaceous biotite-muscovite andalusite whose sections are sometimes graphitic. Small greenstone lenses are often found within this sequence. This section constitutes the lower member of a 6,000 foot thick sequence of biotite-muscovite schist, calc-silicate gneiss and skarn, phyllite, chloritic greenstone bodies, and tuffaceous phyllite.

The phyllitic host rocks of the Grum, Vangorda and Swim sulphide deposits are confined to graphitic quartz-rich sections of phyllite situated close to relic volcanic complexes of greenstone, chloritic phyllite, limestone, and pyroxenite in the lower and upper parts of an estimated 3,000 foot thick unit of phyllite. The phyllite unit is separated from the lower schist unit in many areas by thick sections of calc-silicate gneiss.

The sulphide bodies of the Anvil district are tabular and lie in the plane of the crenulation foliation developed during the first phase of deformation. The long axes coincide with the intersection of primary and secondary foliation. The sulphide deposits appear to have been only slightly affected by the regional metamorphism of phyllite host rocks.



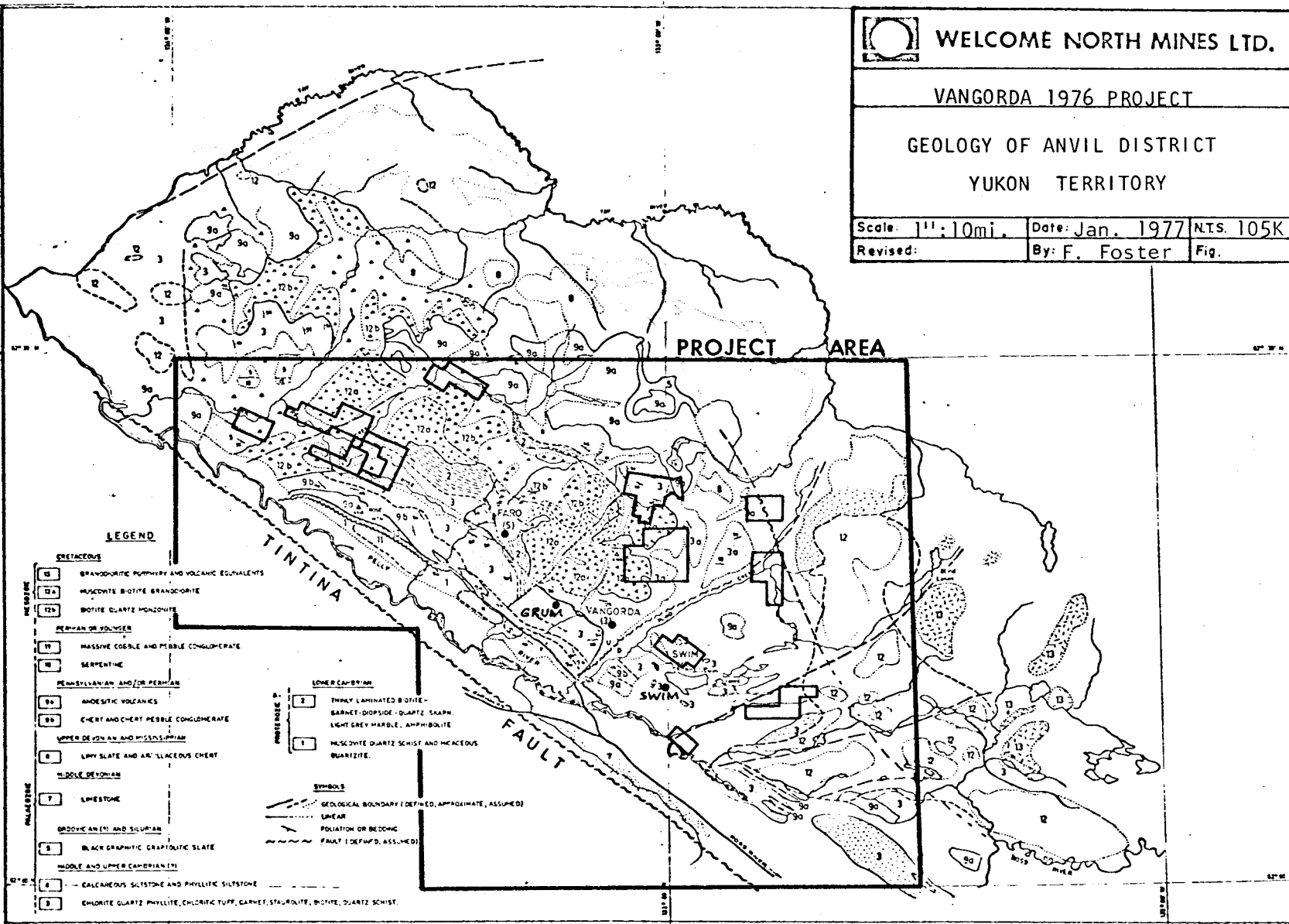
WELCOME NORTH MINES LTD.

VANGORDA 1976 PROJECT

GEOLOGY OF ANVIL DISTRICT
YUKON TERRITORY

Scale: 1" = 10mi. Date: Jan. 1977 N.T.S. 105K

Revised: By: F. Foster Fig.



LEGEND

- CRETACEOUS**
- 12 GRANODIORITE MURPHYRY AND VOLCANIC EQUIVALENTS
 - 12a MASCOITE-BIOTITE GRANODIORITE
 - 12b BIOTITE-QUARTZ MONZONITE
- PERMIAN OR YOUNGER**
- 11 MASSIVE COBBLE AND PEBBLE CONGLOMERATE
 - 8 SERPENTINE
- PENNSYLVANIAN AND/OR PERMIAN**
- 9a ANDESITIC VOLCANICS
 - 9b CHERT AND CHERT PEBBLE CONGLOMERATE
- LOWER DEVONIAN AND MISSISSIPPIAN**
- 4 LIMY SLATE AND ARGILLACEOUS CHERT
- MIDDLE DEVONIAN**
- 7 LIMESTONE
- ORDOVICIAN (?) AND SILURIAN**
- 3 BLACK GRAPHITIC GRAPHOLITE SLATE
- MIDDLE AND UPPER CAMBRIAN (?)**
- 4 CALICAREOUS SLTSTONE AND PHYLLITIC SLTSTONE
 - 2 EMBLONITE QUARTZ PHYLLITE, CHLORITIC TUFF, GARNET, STAUROLITE, BIOTITE, QUARTZ SCHIST
- LOWER CAMBRIAN**
- 3 THINLY LAMINATED BIOTITE-GARNET-DIPSIDE-QUARTZ SLTSH. LIGHT GREY MARBLE, AMPHIBOLITE
 - 1 MASCOITE QUARTZ SCHIST AND MICACEOUS QUARTZITE.
- SYMBOLS**
- GEOLOGICAL BOUNDARY (DEFINED, APPROXIMATE, ASSUMED)
 - LINEAR
 - FOLIATION OR BEDDING
 - FAULT (DEFINED, ASSUMED)

However, a distinct average grain size increase from the Swim northwest to the Faro deposits reflects a thermal metamorphic gradient caused by the intrusion of the Anvil Batholith. The base metals have been introduced into the phyllite prior to its metamorphism and deformation.

It appears that two units, the pelitic schists and phyllites, are host rocks for the five economically important sulphide masses and are also host to several smaller, presently non-economic deposits in the area.

Chloritic tuffaceous greenstone outcrops are close to all five deposits but are nowhere immediately against ore. Graphite is present in host rocks around all five deposits, but it is far more prevalent around the Swim body than near the Vangorda, Grum or Faro deposits.

A description of the rocks that make up the stratigraphic section of the Anvil Arch, and their tentative ages is listed on the following page. The description has been taken from Templemen-Kluit (1968) and modified by field observations and by information obtained from Cyprus-Anvil Mining Company.

ERA	PERIOD OR EPOCH	FORMATION	MAP UNIT	LITHOLOGY	
Cenozoic	Tertiary		14b	Rhyolitic tuff	
			14a	Quartz-feldspar porphyry	
RELATIONS NOT KNOWN					
Mesozoic	Cretaceous or Tertiary		13	Saussuritized porphyritic hornblende diorite	
			INTRUSIVE INTO UNITS 2, 3, AND 11		
	Age unknown		12b	Hornblende diorite, gabbro	
			12a	Pyroxenite, sometimes cataclastic and serpentized	
	INTRUSIVE INTO UNITS 2 AND 3				
	Cretaceous	Anvil Batholith		11	Porphyritic biotite-quartz monzonite and granodiorite; muscovite-biotite granodiorite; foliated equivalents
INTRUSIVE INTO UNITS 2, 3, AND 8					
Lower or Middle Triassic			10	Massive, well indurated cobble and pebble conglomerate with fragments of mica quartz schist (Unit 1), basalt (Unit 8), chert (Unit 8a), limestone (Unit 8c) and serpentinite (Unit 9); brown sandstone slate and argillaceous limestone	
Upper Permian or Lower Triassic			9	Serpentinite and serpentized peridotite	
FAULT BOUNDED					
Paleozoic	Upper Permian	Anvil		8c	Light grey, massive resistant recrystallized limestone
	Lower Permian	Range		8b	Massive green basalt, commonly amygdaloidal, includes common pyroclastic and less common pillowed varieties, metamorphosed equivalents near granitic bodies
				8a	Greenish grey, pale green and brick red argillaceous and tuffaceous chert
	Lower Permian and Upper Permian	Group			
	UNCONFORMABLE ON UNITS 3, 4, 5, 6, 7				
	Upper Devonian			7	Grey slate, chert, graywacke, chert pebble conglomerate and limestone
	UNCONFORMABLE ON UNITS 3 AND 4				
	Middle Devonian			6	Limestone and dolomite
	Silurian and Devonian			5	Light grey, medium bedded, medium-grained orthoquartzite
	CONFORMABLE				
	Middle Ordovician or Lower Silurian			4	Dark grey and black graptolitic-slate, minor thin-bedded black chert
	UNCONFORMABLE ?				
Ordovician-Silurian			3a	Amygdaloidal chlorite phyllite; massive andesitic greenstone at lower boundary of unit; contains 3b (host here for Swin massive sulphide deposit) and 3d.	
			3d	Rhyolitic quartz feldspar tuff, sometimes pyritic; bleached quartz-sericite-(pyrite) phyllite (metatuff).	
			3c	Medium-green, foliated actinolite schist; andesitic greenstone; foliated fine-grained amphibolite.	
			3b	Graphitic phyllite and quartzite; can contain 3d; can contain massive sulphide (Grum-Vangorda).	
			3a	Medium greenish-grey, lustrous, limy, chlorite-muscovite-quartz phyllite; sometimes weakly graphitic; contains 3b, 3c, and 3d.	
Cambro-Ordovician			2e	Marble, contains quartzites.	
			2d	Metabasite; see unit 1e for description.	
			2c	Non calcareous carbonaceous and/or siliceous phyllite containing marble lenses and minor (<5%) calc silicate bands; contains 2d.	
			2b	Calc silicate gneiss undifferentiated; variable amounts of marble, biotite phyllite, and calc silicate; contains 2d and 2e.	
			2a	Transition zone, interbanded schist and calc silicate, marble bands and schistose biotite phyllite bands, some quartzite.	
Cambrian			1f	Marble; can contain quartzite compositions.	
			1e	Metabasite; well banded greenstone, sometimes exhibiting flaser structure; biotite concentrated in thin laminations; sometimes actinolite schist.	
			1d	Graphitic schist and phyllite; variable graphite content; some andalusite present where weakly graphitic biotite present as thin laminations; can contain 1e and 1f; can be calcareous or siliceous; contains Faro massive sulphide deposit.	
			1c	Carbonaceous biotite-muscovite-andalusite schist; upper sections contain 1d, 1e, and 1f; muscovite-quartz schist sometimes containing andalusite present in upper sections; andalusite contains carbonaceous inclusions, chistolite sometimes present; pyrite and pyrrhotite present in trace amounts.	
			1b	Transition zone, combination of quartzofeldspathic biotite-muscovite schist (1a) and carbonaceous biotite-muscovite-andalusite schist (1c), andalusite disappearing, garnet and staurolite content increasing, biotite reddish in colour; textures more granoblastic; can contain 1e.	
			1a	Quartzofeldspathic biotite-muscovite schist; can contain 1e; garnet and staurolite present; gneissic textures.	

TABLE 1 LITHOLOGIC SECTION, ANVIL DISTRICT
Revised February 2, 1977

PREVIOUS WORK

The ROX claims were staked by Kerr-Addison in March, 1963 to cover an area of transported gossan and mineralized float containing sphalerite, galena, and arsenopyrite. Kerr-Addison conducted self potential and vertical loop electromagnetic surveys in the same year. The two surveys indicated a coincident conductor in an area up slope and to the northwest of the gossan occurrences.

Anvil Mining Corp. restaked the ground as the CAM claims in October, 1965. The KISMET claims were fringe staked by Northwest Metals Ltd. in April and June, 1966.

The area was again restaked as the MUR claims in July, 1968 by Spartan Exploration Ltd. Following further protective staking in 1970, Spartan conducted a horizontal loop electromagnetic survey which did not confirm the Kerr-Addison conductor. Geological mapping, soil sampling and an induced polarization survey were carried out later in 1970.

Two conductors were outlined by the I.P. survey. The first conductive zone, situated near the head of the valley in the southern portion of the claim group, is approximately 1600 feet by 1200 feet in surface dimension. This conductive zone has not been previously geochemically sampled. The second conductor has not been closed to the southeast, coincident to its northwest striking axis is a zone of anomalous lead geochemistry which covers an area of approximately 2000 by 800 feet. Both I.P. conductors have been interpreted to indicate shallow-seated sources of graphitic horizons or disseminated sulphide with significant depth potential.

Further work, consisting of a geochemical follow-up survey, was carried out by Cyprus Explorations in July, 1973. The geochemical results indicated that the principal sulphide mineralization is elongated in an east-west direction and is associated with a quartz porphyry dyke. Mineralization outside this area is weak where tested by stream-silt sampling.

Samples of galena previously assayed for silver returned respective values of 50 ounces per ton and 0.3 ounces per ton. Samples of arsenopyrite assayed for cadmium returned values of 0.05 percent.

The BAR claims were staked over the old MUR claims in August, 1974 and restaked as the RAZ 1-20 claims in August, 1975 by the Vangorda 1975 Project.

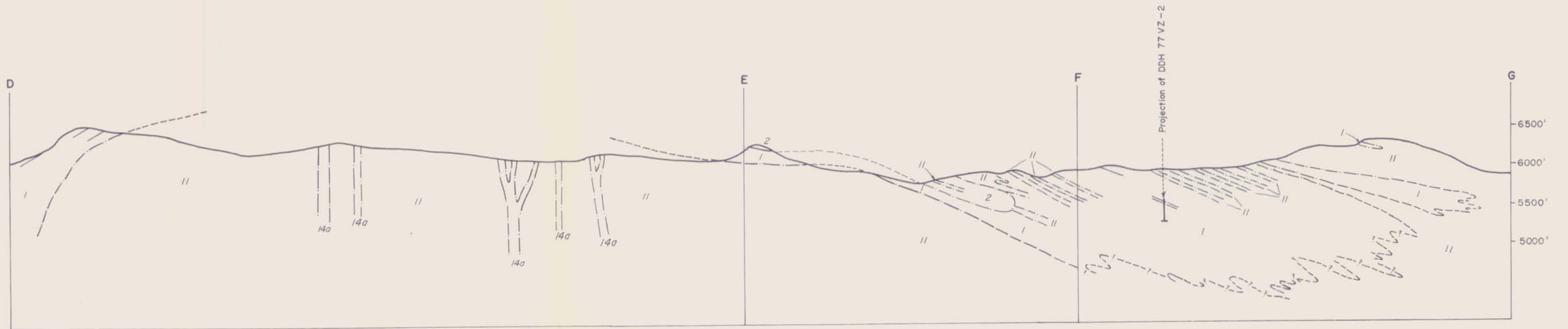
Following geochemical and geological surveys in August, 1976 the RAZ 21-109, 111-180, and 182 mineral claims were tied on in December, 1976.

GEOLOGY


The RAZ claims appear to be predominantly underlain by granitic rocks of the Anvil batholith [Unit (11)] (see Table 1). What appear to be gently south-dipping roof pendants of biotite-muscovite schist [Unit (1)] and calc silicate gneiss [Unit (2)] can be traced across four ridge tops which traverse the property (see Plate 1). The extent of these schists and gneisses cannot be properly ascertained due to the extensive cover of overburden which lies in the valley bottoms and on the ridge flanks. These bodies do, however, appear to be roof pendants as is evident by the abundance of granite dykes and sills intruding them and by the existence of large bodies of granitic rocks which separate them from the main metamorphic body which onlaps the batholith along the northern edge of the property (see Fig. 4, 5, 6).

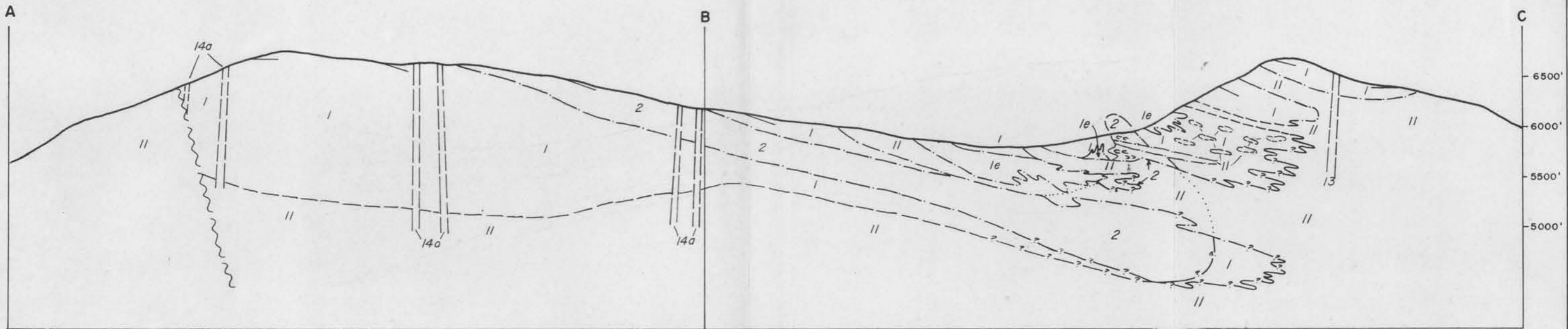
Several northwesterly trending quartz-feldspar prophyry dykes [Unit (14a)] intrude the granitic rocks north of the schist pendant. These vary up to two hundred feet thick and appear to be vertically dipping. Abundant smaller but similar dykes occur just northwest of the claim block. These however trend east to northeast parallel to small scale shearing and faulting in the vicinity, along which they were possibly intruded. Unit (14a) rocks appear to be the youngest rocks in the area.

Mineralized float was mapped in the overburden in the central regions of the initial RAZ 1-20 claim block. All the float was found in strongly gossanous boulder trains and in boulders in the creek bed. The float not in the creek seems to be localized into two zones. The first zone is triangular in shape and extends northwest from the creek with sides of 1400 feet, 1200 feet, and 1800 feet in length. The second zone a linear zone, extends westward from the creek about 2,400 feet (see Plate 1). The source of this mineralization is still in question as no "in place" mineralization has been found.




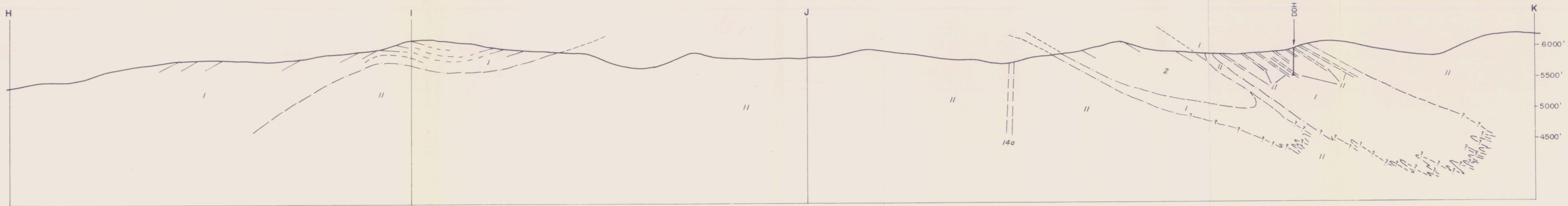
LOOKING EAST

 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS		
GEOLOGICAL CROSS SECTION		
Scale: 1" = 1000 FEET	Date: DEC. 1977	NTS 105 K/6
Revised:	By: B. Holland	Fig. 5




LOOKING EAST

 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS GEOLOGICAL CROSS SECTION		
Scale: 1" = 1000 FEET	Date: DEC. 1977	NTS. 105 K/6
Revised: _____	By: B.Holland	Fig. 4



LOOKING EAST

 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS		
GEOLOGICAL CROSS SECTION		
Scale: 1" = 1000 FEET	Date: DEC. 1977	N.T.S. 105 K/6
Revised:	By: B. Holland	Fig. 6

Other isolated localities of mineralization were found in the northern reaches of the property close to outcrops of granite and quartz-feldspar porphyry dykes. Included in this is a 1-foot thick vein of massive coarse-grained galena and intrusive fragments, traceable for 15 feet, found in a creek bed in the northwest corner of the claim group. The mineralization occurs along a shear within a rusty-altered phase of Unit (11) and appears to be erratic and of minor extent.

These isolated mineral localities appear to be post intrusive in origin, possibly related to the intrusion of the quartz-feldspar porphyry dykes and are thought to be caused by remobilization of deeper more extensive mineralization possibly within the schist unit.

Lithology

The schist unit [Unit (1)] is composed of coarse to fine-grained quartzofeldspathic biotite-muscovite schist which is locally strongly garnetiferous and granoblastic. Also included is a finer-grained carbonaceous quartz-biotite-muscovite schist.

The calc-silicate [Unit (2)] consists of pale-green and purplish-brown banded skarn with layers of fine-grained tremolite-actinolite and minor chlorite and limestone. This unit directly overlies Unit (1).

The batholithic rocks [Unit (11)] consist of medium to fine-grained leucocratic quartz monzonites composed of orthoclase, quartz, plagioclase, muscovite, and minor biotite (Mortensen 1977). Associated with the quartz monzonite are abundant dykes and irregular pods of aplite and/or pegmatite composed of quartz and feldspar with abundant muscovite, often forming books up to several inches across and minor euhedral black tourmalines and red garnets. Several related large bull quartz veins were also noted.

Several lamprophyre dykes [Unit (13)], trending northeast,

occur in the western part of the property, south of the area of extensive quartz-feldspar porphyry dyking. These dykes which cut both intrusives and schist rocks alike, consist of abundant small phenocrysts of pigeonite and plagioclase in a glassy grey matrix (Mortensen 1977).

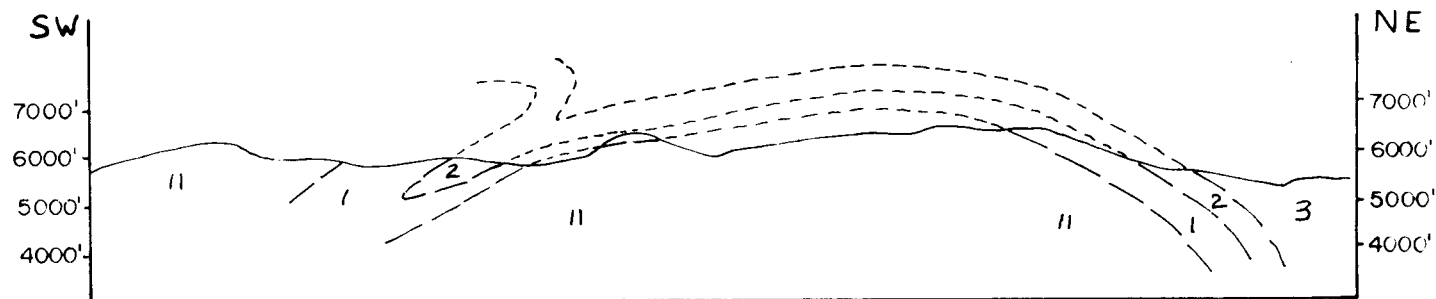
The quartz-feldspar prophyry dykes [Unit (14a)] are of rhyolitic composition containing smoky quartz and potassium feldspar phenocrysts up to 1/4 inch in size, set in a very fine grained groundmass. Associated with these dykes are minor amounts (less than 2%) of pyrite and arsenopyrite.


The mineralized float which occurs on the property consists of arsenopyrite, pyrite, galena, and sphalerite in quartz and igneous gangue. The gangue is very badly leached and brecciated and the actual rock type, apart from quartz, is difficult to ascertain.

Structure

The metamorphic rocks of Units 1 and 2 over most of the property are consistently dipping south to southwest at 10-25°, with the main schistosity (S_2) of Unit (1) parallel or nearly parallel to compositional layering. Along the northern edge of the claim group the dips are to the north to northeast at 10-20°, completing a broad shallow arch with intrusive rocks in the core (see Fig. 7). The calc silicate unit, where exposed on the ridges, is both overlain and underlain by schist, suggesting a tight isoclinal syncline plunging nearly horizontal to 120° (or 300°) with an axial plane dipping southerly at 0-20° as measured from minor folds.

The contact between the granitic rocks and the schist is largely conformable or nearly conformable to the schistosity, suggesting intrusion or granitization along the schistosity and explaining the abundance of granitic sills and apparently "in place" schist xenoliths along the often very gradational contacts. Evidence of granitization was observed at several locations within the schist. The intrusive rocks appear to have



 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
Schematic Geological Cross-section through RAZ Claims		
Adapted from Mortenson 1977		
Scale	Date	NTS
1/50000	Dec 9, 1977	10x6
Revised	By	Fig
	B. Holland	7

a preference for the schist unit which in places is almost completely replaced, whereas adjacent calc silicate rocks contain very little granitic material. This may be due to ease of emplacement along schistosity.

The lamprophyre dykes in the western part of the property appear to be offset portions of a single more extensive dyke. The offsetting is consistently right lateral and may indicate some minor faulting in a northwest-southeast direction. Displacement varies from less than one hundred feet to greater than two thousand feet.

No major faulting was observed, in the vicinity of the RAZ Group, however, there seems to be extensive minor faulting and shearing in an east to north-easterly direction with displacements in the order of several hundred to several thousand feet.

LINE CUTTING

The grid lines cut during 1976 were repicketted and extended by line cutters from Eastern Associates Limited, who were hired on a contractual basis from Whitehorse. Each of the nine crosslines were extended 2500 feet to the west for a total of 4.26 new line-miles, using slope corrected chain and picket method with picket established at 100-foot intervals (see Fig. 8).

GEOPHYSICS

A Max-Min E.M. survey was conducted over the grid area by John E. Betz of John Betz Limited, Toronto, Ontario during August, 1977. The results of this survey are contained in a separate report "Report on the Max-Min II E.M. Survey, Welcome North Mines Ltd., RAZ Grid".

DIAMOND DRILLING

Two 'BQ' size diamond drill holes were completed on the RAZ claims during the period August 16 to August 22, 1977 (see Fig. 8). These holes have also been filed for assessment separately. The results for hole DDH 77VZ-1 are contained in the report "Report on Diamond Drilling Program on the RAZ 1-20 Mineral Claims" dated August 30, 1977. Those for hole DDH 77VZ-2 are contained in the report "Report on Diamond Drilling Program on the RAZ 1-182 Mineral Claims" dated December 15, 1977.

GEOCHEMISTRY

1. Method of Survey

Two methods of survey were used in 1977. The first consisted of regional silting of seeps and streams, with some soil sampling in drier areas, at scattered localities within the property. The second method entailed grid soil sampling at 100-foot intervals along some of the extended grid lines (spaced at 800 feet between lines). These soil samples were obtained with a grub hoe and were taken from below the ash layer where possible. The samples were collected in Kraft brown paper bags and shipped to Acme Analytical Laboratories Limited in Burnaby, B.C. for analysis.

2. Method of Analysis

All samples were analyzed by Acme Analytical Laboratories Limited in Burnaby. When the samples were received, each was dried while in its Kraft bag, then screened to 80 mesh, weighed out to 0.5 grams and digested in hot aqua regia. Samples were then diluted, clarified for 20 hours and then tested for lead and zinc content on an atomic absorption spectrophotometer. Accuracy of the instrument ideally is 1% of the amount of metal present. Individual cathode lamps were used for each element determination, a direct readout being given in parts per million of the element being tested.

3. Treatment of Data

All results of geochemical tests were returned to the field where results were plotted on field maps kept by the party chief for aid in carrying out preliminary follow up of anomalous areas while still in the field. Soils were distinguished from silts and the regional geochem from the grid. Lead and zinc were plotted on the same map using divided circles and color coding to delineate anomalous values.

A partitioning procedure (see A.J. Sinclair 1973) was used to separate two and sometimes three populations, one being anomalous and the others being background. The overlap of these populations was determined and thresholds chosen arbitrarily to isolate three and sometimes four priority populations. The population of first priority consists of only anomalous values. Of second priority is a population consisting mainly of anomalous values and a small percentage of background values. Finally, of third priority is a population consisting only of background values. Where only two priority populations are shown, the partitioning procedure could not be applied or no overlap of populations existed. Where four populations could be isolated, the two highest populations were considered anomalous.

The values used in partitioning the 1977 data were obtained from the previous years work due to the limited number of samples taken during 1977.

4. Interpretation of Results

Lead

Grid silt and soil geochemical surveys completed in 1976 outlined a large anomalous lead zone in the northern half of the survey area. Many of the lead values in this anomalous zone were in excess of 1000 ppm and some ranged as high as 2300 ppm. The anomalous zone was open to the north, east, and west.

Grid soil sampling in 1977 extended this anomaly 1500 to 2000 feet west of the baseline in the vicinity of lines 40N to 56N. West of the anomaly the lead values are consistently low and non-anomalous. Plate II is a compilation of both 1976 and 1977 grid geochemical surveys and is colour coded to show the different populations.

Regional silt and soil geochemistry done in 1977 and compiled with 1976 regional sampling (see Plate III) has extended the anomalous area at least 6000 feet to the north and east, thus delineating a high lead zone, roughly 10,500 feet by 12,000 feet, which is open to the northeast and

northwest. This anomalous zone corresponds to the area underlain by Unit (11) granitic rocks and appears to indicate a very high background in lead within these rocks. The non-anomalous areas appear to be underlain mainly by schist and calc silicate rocks, with the contact between the schist and granite roughly corresponding to the edge of the anomalous zone. Granitic rocks to the south and east of the schist pendant are non-anomalous in lead.

Zinc

A large anomalous zone, corresponding to that obtained for lead, was also outlined for zinc by the 1976 grid survey. The values were, however, consistently lower than those for lead, rarely exceeding 1000 ppm (see Plate II). This anomaly, like that for lead, was also open to the north, east and west.

The 1977 grid soil survey failed to extend the anomaly to the west, closing off the anomaly in the vicinity of the baseline. The regional survey did however extend the anomalous zinc zone to the north and east, covering an area similar to that outlined for lead (see Plate III). Thus it appears that the zinc anomaly also corresponds to high backgrounds within the intrusive, with the values from the schist and calc silicate rocks being consistently much lower. Granitic rocks to the south and east are also low in zinc.

CONCLUSIONS AND RECOMMENDATIONS

The source of lead-zinc rich float concentrations found within the RAZ claim block has not, to date, been satisfactorily determined. It is quite possible that this mineralization was derived from a mineralized zone within the adjoining Anvil host-type schist rocks or was remobilized by the granite from a deeper source, possibly a partially assimilated schist body or xenolith. The latter is evident by the anomalously high background lead and zinc values within this portion of the batholith and by the presence of minor mineralization within the granite.

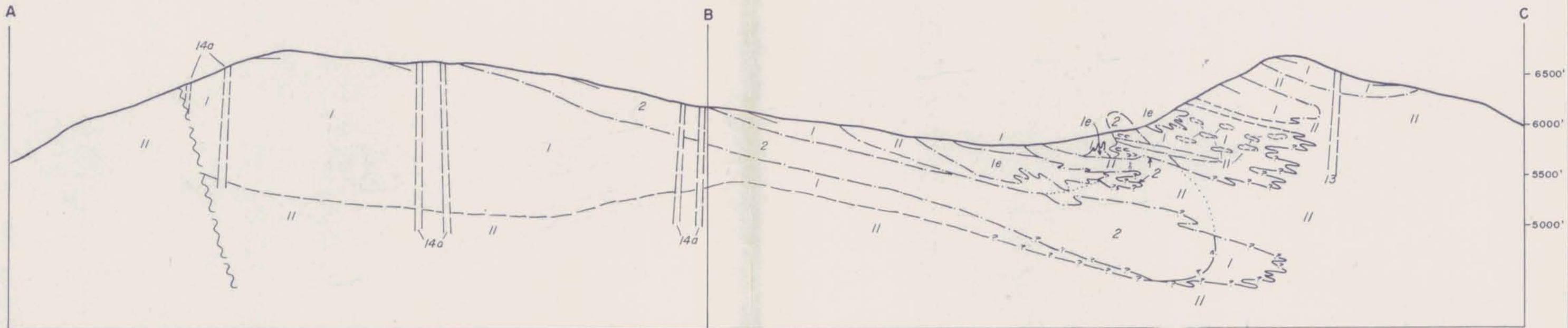
The 1977 diamond drilling tested coincident EM and magnetometer anomalies within the schist unit and successfully established the presence of a favourable graphitic schist horizon containing up to 4% sulphides in the form of pyrite and pyrrhotite. This unit is open to projection laterally and down dip, with the possibility of favourable sulphides nearby.

The results of this and previous years programs provide sufficient justification for continued exploration in this vicinity. It is recommended that further work on the property include extending the grid lines to the southeast to cover schist rocks there and that further geophysics in the form of EM and possibly gravity surveys be done to further delineate the favourable graphite horizon. Further geochemical investigation is also recommended, especially in areas sparsely covered by the 1977 regional survey.


Additional diamond drilling is also necessary to further investigate the graphitic schist horizon and possibly to probe for a hidden schist body within or beneath the granite.

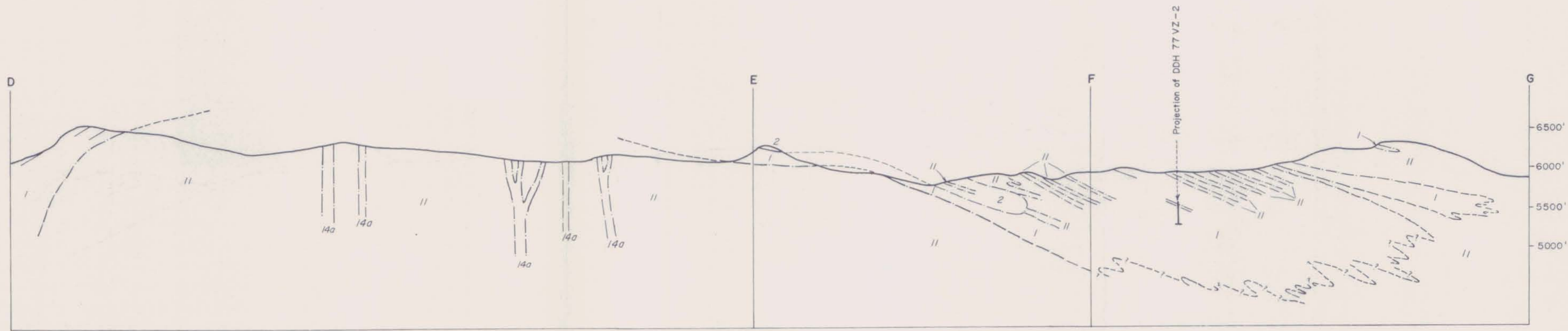
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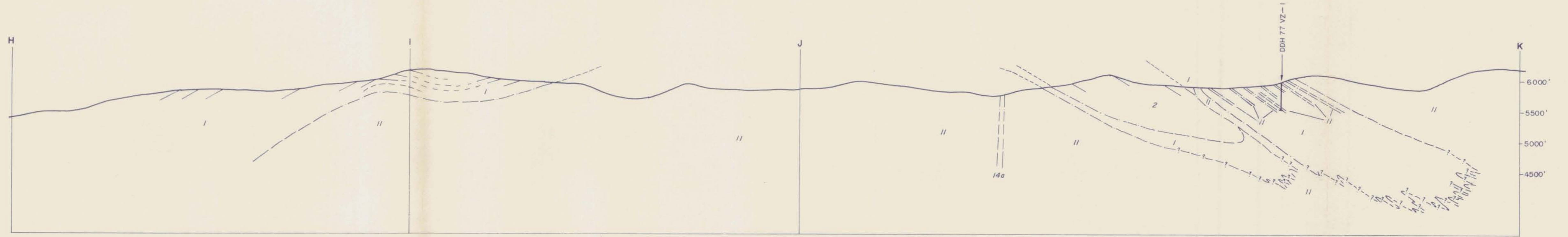
LOOKING EAST

 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS GEOLOGICAL CROSS SECTION		
Scale: 1" = 1000 FEET	Date: DEC 1977	NTS. 105 K/6
Revised: _____	By: B.Holland	Fig. 4




LOOKING EAST

 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS		
GEOLOGICAL CROSS SECTION		
Scale: 1" = 1000 FEET	Date: DEC. 1977	NTS 105 K/6
Revised:	By: B. Holland	Fig. 5



LOOKING EAST


 WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS		
GEOLOGICAL CROSS SECTION		
Scale: 1" = 1000 FEET	Date: DEC. 1977	NTS 105 K/6
Revised: _____	By: B. Holland	Fig. 6


FAT Claims
Cyprus Anvil


ELLE Claims




WYNNE Claims
Vangorda

No work done,
proposed to let lapse 

Grid Line 

Diamond Drill Hole 

 WELCOME NORTH MINES LTD.
VANGORDA 1976 PROJECT
RAZ 1-109, 111-180 & 182 CLAIMS
GRID LOCATION MAP

Scale 1" = 1/2 mi Date Jan. 1977 NTS 105K-6
Revised DEC. 1977 By E. Foster Fig. 8



LEGEND

- TERTIARY
 - 14a QUARTZ-FELDSPAR PORPHYRY DYKE
- MESOZOIC
 - 13 SAUSSURITIZED HORNBLENDE-FELDSPAR PORPHYRY DYKE
- AGE UNKNOWN
 - 12 PYROXENITE, SOMETIMES CATACLASTIC AND SERPENTINIZED
- CRETACEOUS
 - 11 PORPHYRYTIC BIOTITE-QUARTZ MONZONITE AND GRANODIORITE; MUSCOVITE BIOTITE GRANODIORITE, FOLIATED EQUIVALENTS.
- CAMBRO-ORDOVICIAN
 - 2 CALC-SILICATE SCHIST, PHYLITE AND GNEISS WITH INTERBANDED BIOTITE AND CALC-SILICATE RICH LAYERS
 - 2a BANDED GREENSTONE
- CAMBRIAN
 - 1 MUSCOVITE SCHIST, MUSCOVITE-BIOTITE SCHIST, MUSCOVITE-ANDALUSITE SCHIST, GRAPHITE, BIOTITE-ANDALUSITE MUSCOVITE SCHIST, GARNET & STAUROLITE, GRAPHITIC SCHIST.
 - 1a BANDED GREENSTONE

SYMBOLS

- OUTCROP
- ~ SHEARING
- ~ FAULT
- FLOAT AND SCATTERED SUBOUTCROP
- CONTACT (DEFINED, APPROXIMATE, ASSUMED)
- ~ STRIKE & DIP OF COMPOSITIONAL FOLIATION (PROBABLE BEDDING) OR SCHISTOSITY
- ~ STRIKE & DIP OF BEDDING
- ~ STRIKE & DIP OF MINOR FOLD AXIAL PLANE
- ~ TREND & PLUNGE OF MINOR FOLD AXES
- JOINTS
- AREA OF SCATTERED MINERALIZED FLOAT

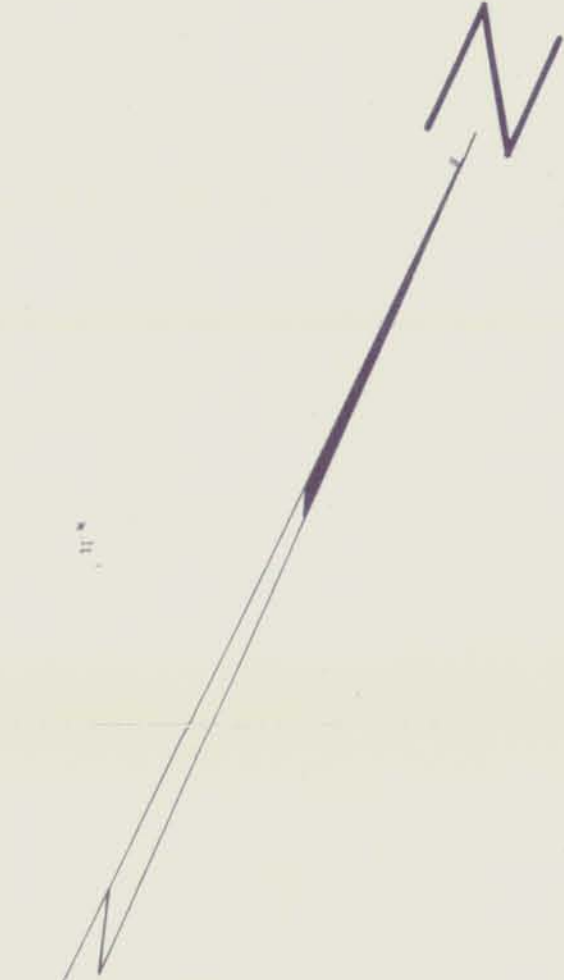
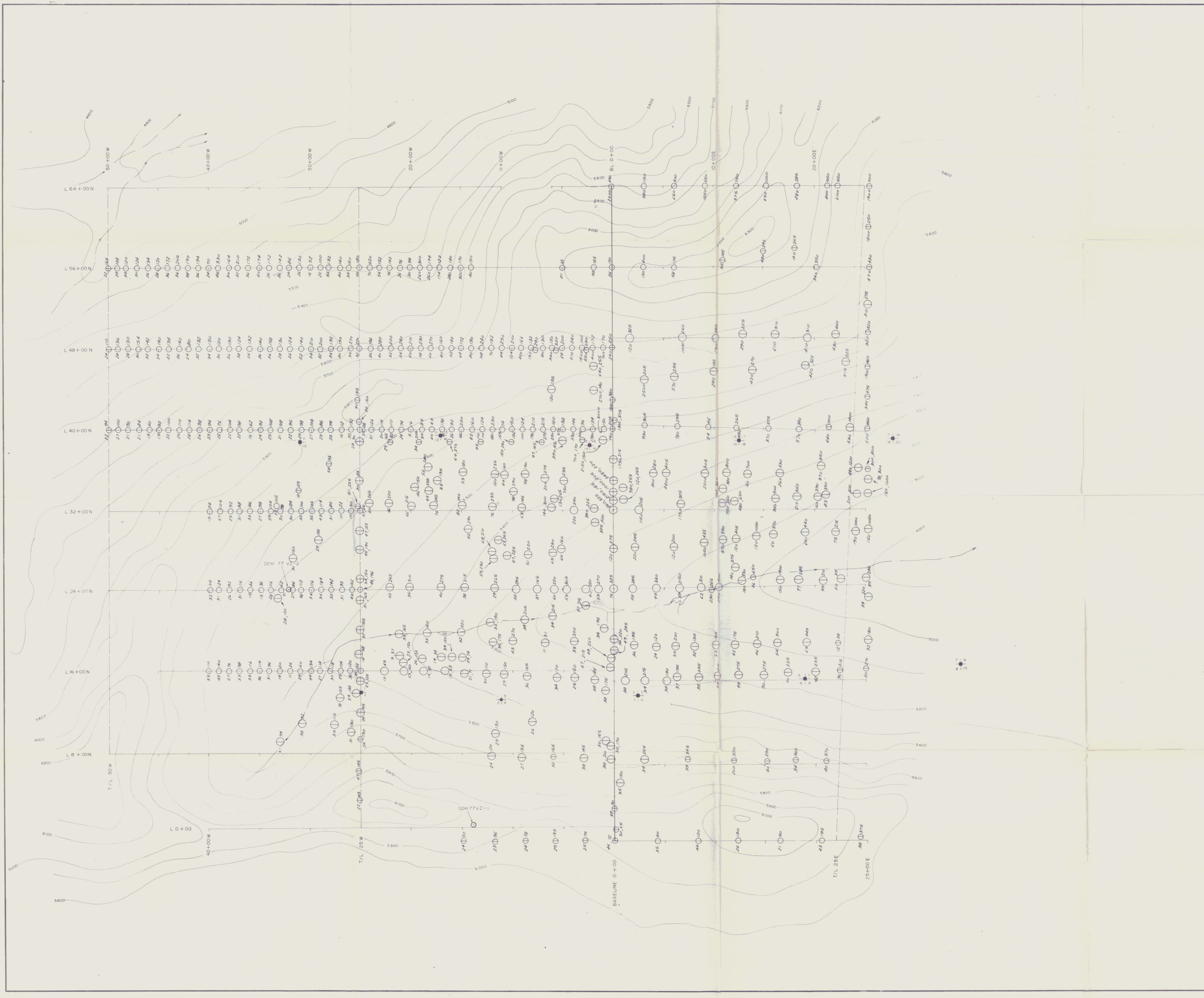
NOTE: GEOLOGY BY B. BRERETON, F. FOSTER & B. HOLLAND

WELCOME NORTH MINES LTD.

VANGORDA PROJECT

**RAZ MINERAL CLAIMS
GEOLOGY**

SCALE	1" = 1000 FEET	DATE	AUGUST 1977	NTS	105 K/6
DRAWN	P. PECEK	REVISED	NOVEMBER 1977	PLATE	I



LEGEND

- CREEK
- □ CLAIM POST (LOCATED, ASSUMED)
- 54 (Pb) (Zn) SOIL SAMPLE SITE with ppm Pb, Zn
- 77 (Zn) SILT

ZINC

○ - SOILS	○ - SILTS
332 + ppm	350 + ppm
255-321 ppm	332-349 ppm
0-254 ppm	0-331 ppm

LEAD

○ - SOILS	○ - SILTS
103 + ppm	82 + ppm
0-102 ppm	29-81 ppm
	0-28 ppm

WELCOME NORTH MINES LTD.

VANGORDA PROJECT

RAZ MINERAL CLAIMS

GRID GEOCHEMISTRY 1976-77

Scale: 1" = 400 FEET	Date: DECEMBER 1977	NTS: 105 K/6
Revised:	By:	Plate II



LEGEND

- LEAD in ppm - SOIL ○ 0-102 ppm ○ 103 ppm+
 - SILT ○ 0-28 ppm ○ 29-81 ppm ○ 82 ppm+
 - ROCK △ 0-40 ppm △ 41-60 ppm △ 61 ppm+
- ZINC in ppm - SOIL ○ 0-254 ppm ○ 255-321 ppm ○ 322 ppm+
 - SILT ○ 0-331 ppm ○ 332-349 ppm ○ 350 ppm+
 - ROCK △ 0-100 ppm △ 101-160 ppm △ 161 ppm+
- Pb ppm ○ Zn ppm - SOIL SAMPLE
 Pb ppm ○ Zn ppm - SILT SAMPLE
 Pb ppm △ Zn ppm - ROCK SAMPLE

DETAILED SOIL SAMPLES (1976) ACROSS DYKE AND ALTERED GRANITE

SAMPLE NO.	PPM Pb	PPM Zn	SAMPLE NO.	PPM Pb	PPM Zn
6VX 74			6VX 655	740	1300
75			686	640	600
6VX 676	490	850	687	1000	600
677	630	315	688	2000	900
678	2100	1550	689	680	700
679	1900	1300	690	520	500
680	1200	395	691	3600	375
681	850	1400	692	290	550
682	550	950	693	450	550
683	530	1450	694	550	850
			695	580	800
			696	520	600
			697	570	750
			698	1700	750
			699	1100	450
			700	1450	750

WELCOME NORTH MINES LTD.		
VANGORDA PROJECT		
RAZ MINERAL CLAIMS		
REGIONAL GEOCHEMISTRY		
1976-1977		
SCALE 1" = 1000 FEET	DATE AUGUST 1977	NTS 105 K/6
DRAWN P. PECEK	REVISED NOVEMBER 1977	PLATE III