WELCOME NORTH MINES LTD. (N.P.L.)
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VANGORDA '75 PROJECT

GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL REPORT

ON THE

MABEL 1-48 and EVA 40-47
CLAIM GROUPS

Latitude 62°24'N Longitude 133°34'W

N.T.S. 105K-5

WHITEHORSE MINING DISTRICT
YUKON TERRITORY

During the Period June 15 - Sept. 30, 1975

b y

F. Foster

and

J.S. Brock

January 14, 1976

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 $ 17,100

u D Sinclair

a/ Resident Geologist or ~~Resident Mining Engineer~~

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

B. R. BAXTER
Supervising Mining Recorder

Per Commissioner of Yukon Territory

17,100

Office of The Supervising Mining Recorder
MAR 24 1976
WHITEHORSE
Yukon Territory

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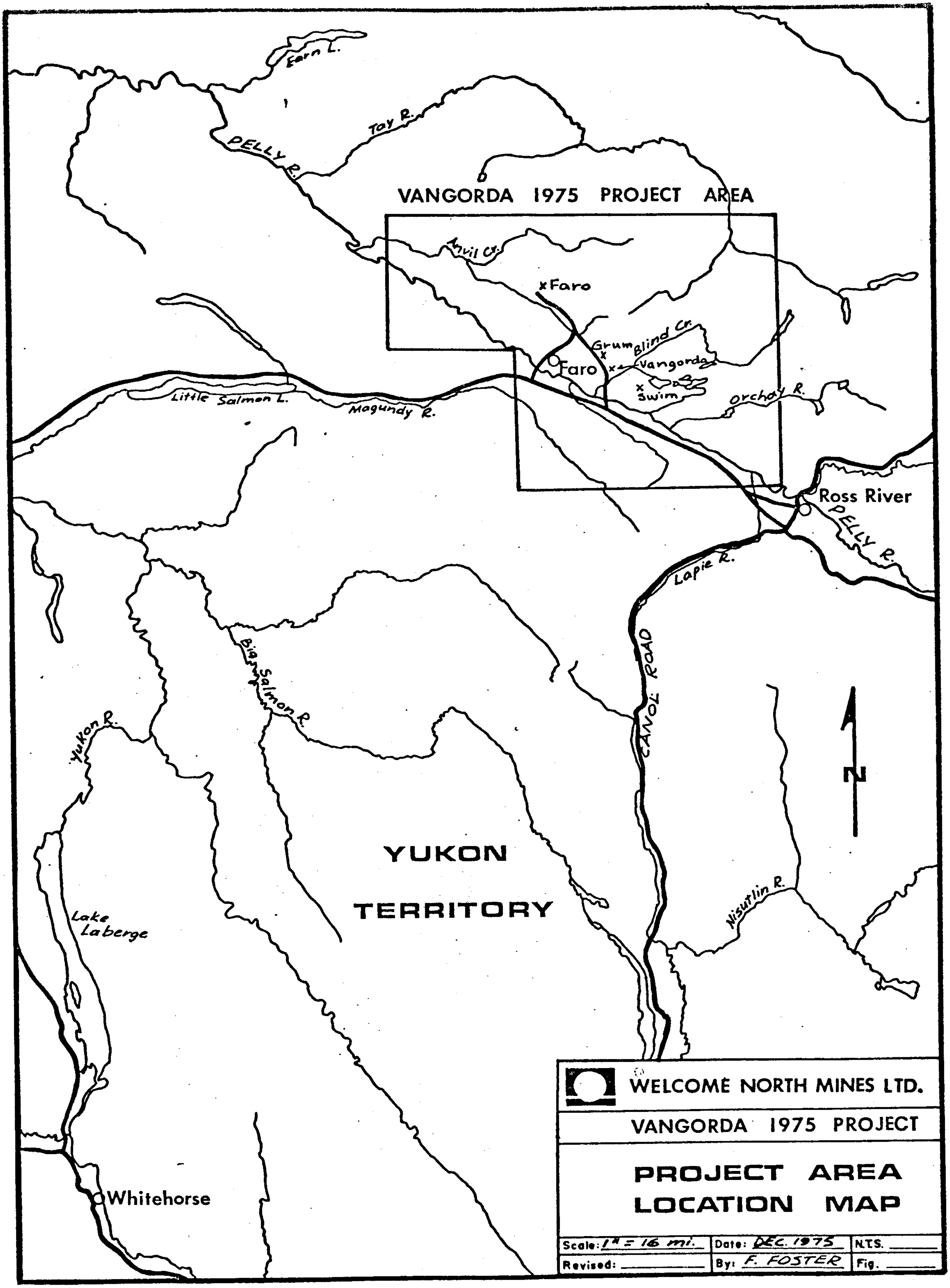


WELCOME NORTH MINES LTD.

VANGORDA 1975 PROJECT

PROJECT AREA LOCATION MAP

Scale: 1" = 16 mi.	Date: DEC. 1975	N.T.S.
Revised:	By: F. FOSTER	Fig.

INTRODUCTION

The MABEL 1-40 claims and adjoining EVA 40-47 claims were staked by Welcome North Mines in February, 1975. The property was located over what was considered to be a favourable geologic environment for Anvil-Vangorda type massive sulphide deposits.

The MABEL and EVA claims were subsequently joint ventured to Getty Mining Pacific Ltd. in March, 1975 as part of the Vangorda 1975 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.

Welcome North, as operator, during the period June 15, 1975 to Sept. 30,1975, carried out an exploration program consisting of geological mapping, soil and silt geochemistry surveys and electromagnetic and magnetic surveys.

MINERAL CLAIMS

The MABEL 1-48 and EVA 40-47 claim groups consist of the following 56 contiguous mineral claims located in the Whitehorse Mining District of the Yukon (see Fig. 1).

CLAIMS	GRANT NUMBERS	RECORDING DATE
MABEL 1-23	Y92450-Y92472	Feb. 18, 1975
MABEL 24A	Y92473	Feb. 18, 1975
MABEL 24-40	Y92474-Y92490	Feb. 18, 1975
MABEL 41-48	Y98912-Y98919	June 25, 1975
EVA 40-47	Y92442-Y92449	Feb. 17, 1975

Figure 1
VANGORDA 75 PROJECT

WELCOME NORTH/
GETTY MINING PACIFIC
MABEL 1-48 & EVA 40-47
105-K-5

SCALE IN MILES

SUMMARY AND CONCLUSIONS

The MABEL claims are of geologic interest as the northern portion of the property is underlain by a thick sequence of schists [Unit (1c)], which contain the massive sulphides at Faro within an integral Unit (1b). The overall geological setting of the MABEL Group is directly comparable to that of the Faro deposit, on strike and 6 miles east of the MABEL.

Although there are a number of coincident and partially coincident gravity, magnetic, and electromagnetic responses in association with areas of anomalous geochemistry, geophysical surveys performed over the MABEL grid have not provided any high priority targets indicative of massive sulphide deposition. This, however, should be anticipated, as the probable depth of sulphide targets will be in excess of the limits of detection to depth of the conventional geophysical methods utilized.

As the presence of the Faro host rock has been established on the property the next phase of exploration should involve diamond drilling to depth to establish the structural and lithologic continuity of Unit (1c).

LOCATION AND ACCESS

The MABEL 1-48 and EVA 40-47 claims are located in the Whitehorse Mining District of the Yukon Territory (N.T.S. 105K-5) at latitude 62°24'N, and longitude 133°34'W, 125 miles northeast of Whitehorse, Yukon Territory and 13 miles northwest of the town of Faro, Yukon Territory (see Figure 2).

Access to the property can best be gained by helicopter from Faro or by two cat trails from the Anvil mine site situated 6 miles east of the property in Rose Creek valley. These ground access routes are serviceable only by tracked vehicle or trail bike. One route traverses the northeast slope of Rose Creek valley and provides access to the northeast portion of the property which is above treeline. Both cat trails are crossed by several streams, the lower cat trail being crossed by Rose Creek, a major drainage system. There has been no bridge construction at any of the Rose Creek crossings, however they can be forded with bulldozers at low water.

The property is located at an elevation of 4,500 feet on a broad southwest trending ridge that divides Anvil Creek valley to the north from Rose Creek valley to the south. More than half the property lies above treeline and about a third of the property is vegetated with buck brush. On the south side of the ridge there are several east facing escarpments bordering a tributary of Rose Creek, which give way to less steep timber laden slopes in the valley. Several northwest facing escarpments are located on the north side of the ridge bordering the southwestern boundary of the property. These cliffs provide the best rock exposure apart from scattered outcrops at topographic highs on the ridge.

WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
PROPERTY LOCATION MAP
MABEL 1-48 & EVA 40-47 CLAIMS
Scale 1" = 10 mi
Date Dec 1975
NTS 105K
Revised
By F FOSTER
Fig 2
TAY R
PROJECT AREA
Anvil Cr
MABEL
EVA
Rose Cr
FARO
PELLY R
GRUM
VANGORDA
Blind Cr
ROSS R

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 and Swim.

The schistose quartz rich host rocks of the Faro sulphide deposits are confined to the lower part of a unit of muscovite-biotite schist whose lower sections are sometimes graphitic. Small greenstone lenses are often found in the upper part of 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 part 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. Their 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.

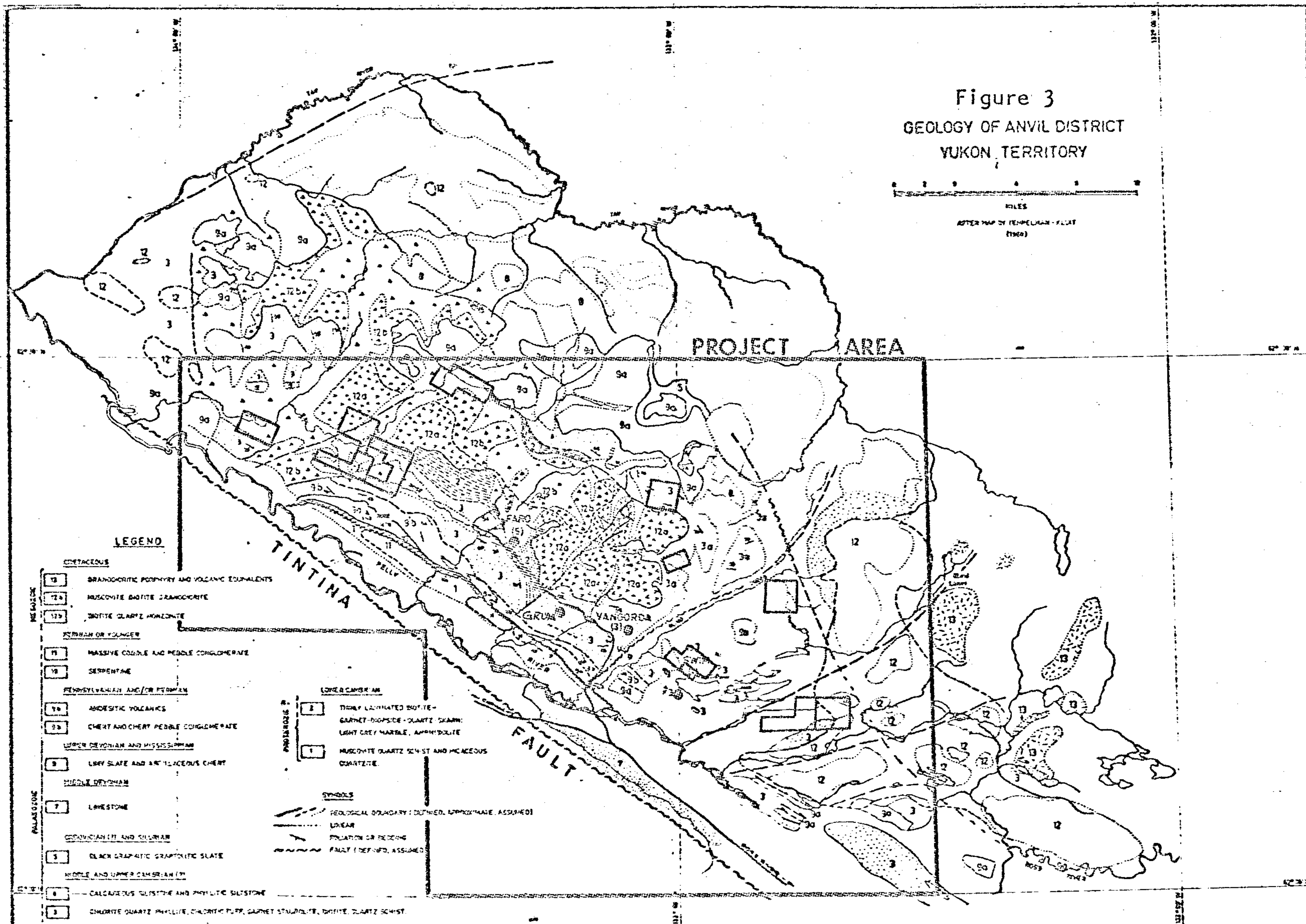


Figure 3
GEOLOGY OF ANVIL DISTRICT
YUKON TERRITORY
MILES
PROJECT AREA
TINTINA
FAULT
FARO (5)
GRUM
VANGORDA (3)
PELLY
RIVER
LEGEND
CRETACEOUS
13 GRANODIORITIC PORPHYRY AND VOLCANIC EQUIVALENTS
12a MUSCOVITE BIOTITE GRANODIORITE
12b BIOTITE QUARTZ MONZONITE
PERMIAN OR YOUNGER
11 MASSIVE COBBLE AND PEBBLE CONGLOMERATE
10 SERPENTINE
PENNSYLVANIAN AND/OR PERMIAN
9a ANDESITIC VOLCANICS
9b CHERT AND CHERT PEBBLE CONGLOMERATE
UPPER DEVONIAN AND MISSISSIPPIAN
8 GREY SLATE AND ARGILLACEOUS CHERT
MIDDLE DEVONIAN
7 LIMESTONE
5 BLACK GRAPHITIC GRAPTOLITIC SLATE
MIDDLE AND UPPER CAMBRIAN (?)
4 CALCAREOUS SILTSTONE AND PHYLLITIC SILTSTONE
3 CHLORITE QUARTZ PHYLLITE, CHLORITIC TUFF, GARNET STAUROLITE, BIOTITE, QUARTZ SCHIST
LOWER CAMBRIAN
2 THINLY LAMINATED BIOTITE-GARNET-DIOPSIDE-QUARTZ SKARN; LIGHT GREY MARBLE, AMPHIBOLITE
1 MUSCOVITE QUARTZ SCHIST AND MICACEOUS QUARTZITE
SYMBOLS
LINEAR
FAULT (DEFINED, ASSUMED)

However, a district 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 four 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 four deposits but are nowhere immediately against ore. Graphite is present in host rocks around all four 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 serpentinized
				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 serpentinized 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
	Lower Permian and Upper Permian	Group	8a	Greenish grey, pale green and brick red argillaceous and tuffaceous chert
				UNCONFORMABLE ON UNITS 3, 4, 5, 6, 7
	Upper Devonian		7	Grey slate, chert, greywacke, chert pebble 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 Lower Silurian		4	Dark grey and black graptolitic slate, minor thin-bedded black chert
				UNCONFORMABLE ?
	Ordovician-Silurian		3d	Rhyolitic quartz-feldspar porphyry, sometimes pyritic
			3c	Medium green foliated actinolite schist, andesitic greenstone, foliated fine grained amphibolite, amygdaloidal chlorite phyllite
			3b	Sulphide horizon; muscovite phyllite and quartzite, siliceous graphitic phyllite, massive and banded pyrite and pyrrhotite
			3a	Dark grey biotite-chlorite schist and phyllite, medium greenish grey lustrous chlorite-muscovite-quartz phyllite, locally calcareous or graphitic
				GRADATIONAL CONTACT
	Cambro-Ordovician		2b	Foliated amphibolite, pale green chloritic phyllite, greenstone, chlorite
			2a	Calc-silicate schist, phyllite, and gneiss with interbanded biotite and calc-silicate rich layers, can contain 2b
				GRADATIONAL CONTACT
	Cambrian		1d	Chloritic schist and phyllite, and greenstone
			1c	Muscovite schist, muscovite-biotite schist, muscovite-andalusite schist ± graphite, biotite-andalusite-muscovite schist ± garnet and staurolite, graphitic schist
			1b	Faro sulphide horizon, muscovite quartzite ± sulphides, massive and banded pyrite and pyrrhotite
			1a	Quartzo-feldspathic biotite-muscovite schist and gneiss, in part bleached and hornfelsed

TABLE [illegible] - LITHOLOGIC SECTION, ANVIL [illegible]

PREVIOUS WORK

The first work to be carried out in the area of the MABEL claims was by Dynasty Explorations, who flew helicopter-borne EM and magnetic surveys as part of a regional exploration program conducted in 1965. As a result of this work, the CROWN claims, located south of the MABEL Group, were staked over aeromag and EM anomalies.

The CROWN claims were later explored in 1967 by Anvil Mining Corporation, who completed soil sampling, magnetic and electromagnetic surveys on the property as well as regional geological mapping of the area. In 1971 a limited program of bulldozer trenching was completed and a Turam-EM survey was carried out. In 1974, portions of the CROWN Group were allowed to lapse and were subsequently re-staked as the MABEL 17, 20, 38 and 40 mineral claims. The B.G. 1-16 claims were staked by Claymore Resources.

In 1966, as a result of the 'Anvil staking rush' the JOE claims were staked by New Far North Explorations Ltd. Prior to 1968, New Far North carried out airborne EM and mag, linecutting, geochemical, magnetic and gravity surveys on the JOE property. The JOE 1-8 claims are currently in good standing and are held under option by Lion Mines. The balance of the original property was allowed to lapse and was subsequently re-staked by Welcome North with the MABEL 21-32 and 33-36 mineral claims.

Previous work over the eastern section of the MABEL Group was carried out by Hecla Mines Limited on the original FUBAR and HILL-RUST claims. In 1967 Hecla performed geological mapping, soil geochemistry, magnetic and I.P. surveys. In 1970, Hecla optioned the JOE claims from New Far North, at which time mapping and gravity surveys were completed over the FUBAR, HILL-RUST and JOE claims. A limited program of bulldozer trenching was carried out by Hecla on the FUBAR and JOE claims, which trenches are located on the presently held MABEL 29 and 43 claims.

Engineering data and reports that have been utilized during the course of the geological, geophysical and geochemical compilations are summarized in the bibliography appended to this report.

GEOLOGY

The property is underlain by moderately southwesterly dipping schists, gneisses and phyllites of Units (1), (2) and (3) [Table 1] which are in contact with the Anvil Batholith on the northern boundary of the property.

Mapping was carried out on a scale of 1" = 400 feet; control was maintained from the geophysical grid using cut lines spaced 800 feet apart. Geology has been plotted on a topographic base map, derived from an Energy, Mines and Resources 1:50,000 topographic publication (Plate 11).

Steep slopes on the east side of the property rise above a southerly flowing tributary of Rose Creek. Several escarpments on these slopes exposed by a fault running up the creek provide excellent exposure. On the west side of the property, a large east-west trending ravine containing a tributary of Anvil Creek exposes limited outcrop on its flanks. A northeast trending fault exposes large escarpments of gneissic rocks of Unit (2) at the head of this ravine.

On a southwest trending ridge top passing through the central region of the property outcrop is restricted to local breaks in relief, elsewhere a thin cover of overburden blankets the whole ridge. General outcrop exposure over the entire property is estimated at 50 percent.

Lithology

Beginning at the bottom of the stratigraphic section (refer to Table 1), Unit (1c) is situated mainly on the north side of the property where it is exposed in contact with the Anvil Batholith (Cretaceous). It is composed approximately of biotite (20%)-muscovite (40%)-quartz (40%) schist of varying grain size. Within 300 feet of the batholith biotite content increases from approximately 20 percent to 60 percent. Within close proximity to the Batholith grain size decreases in the schist.

On the western part of the property, in the vicinity of Station 292E-14N, large crystals of staurolite of up to 1 inch in length are found in medium-grained to coarse-grained muscovite-biotite-quartz schist (see Fig. 4). Near 268E-21N, pods of coarse grained muscovite and quartz fill 4 to 6 inch diameter vugs in the schist. Garnet occurs in the schist at 268E-18N and in areas farther to the east near the contact with the batholith. Stringers of milky quartz are found in the schist between 268E and 260E at 20N, as well as on lines 252E and 244E close to the contact with the batholith.

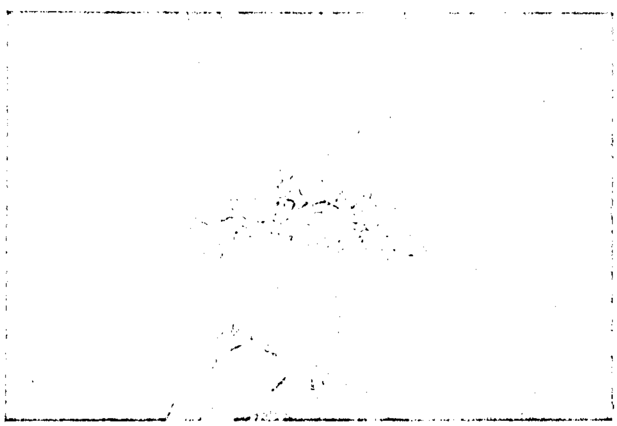


Figure 4 0.5 mm.
Thin-section of biotite-muscovite schist, Unit (1c), showing twinned staurolite crystal. (Plain light.)

Lenses of Unit (1d) with a maximum thickness of 15 feet, occur within Unit (1c) and lie in the plane of dominant schistosity. Foliated greenstone found within (1d), its strike-length unknown due to overburden occurs at 252E-24N, while higher in the section, pale-green chloritic phyllite occurs near the contact between Unit (1c) and Unit (2a) as a shallow southerly dipping lens ten feet thick at 252E-8N. The frequency of these lenses of Unit (1d) cannot be properly ascertained because of overburden masking.

The contact between Unit (1c) and (2a) is gradational. Near the contact, Unit (1c) becomes a phyllitic biotite hornfels intercalated with bands of pale-green and brown calc-silicate gneiss.

Unit (2a) is characterized by whitish weathering calc-silicate gneiss composed of laminated pale-green and purplish-brown banded skarn, layers of fine-grained tremolite-actinolite with minor chlorite, and phyllitic partings. All layers and bands are generally less than 2 inches thick. The skarn bands are composed of fine-grained K-feldspar, actinolite, diopside and quartz with calcite and minor brownish grossularite garnet (see Fig. 5). Minor amounts of pyrite and pyrrhotite occur throughout Unit (2a) but are found in more concentrated quantities as smears on shears and blebs in skarn bands at 244E-14S and 276E-5S. Minor amounts of galena and sphalerite disseminated along a shear were reported from previous surveys in the area of 268E-14S but were not found by the author.

Figure 5 0.5 mm.
Thin-section of calc-silicate gneiss, Unit (2a), showing bands of diopside and actinolite, on right, and quartz and k-feldspar with opaques, on left. (Crossed nicols.)

Unit (2b) occurs frequently throughout Unit (2a) as lenses less than 10 feet thick lying in the plane of dominant schistosity. These lenses have not all been mapped due to their limited size, however it is estimated that there are one or two lenses per hundred feet of section in Unit (2a).

The lenses of Unit (2b) are mainly rusty weathering foliated amphibolite composed of green tremolite-actinolite intergrown with andesine and minor quartz. Thin partings of sericite and disseminated pyrite and pyrrhotite occur throughout these rocks.

Unit (2b) occurs as pale-green chlorite phyllite interbedded within Unit (2a) at 252E-7N. It also occurs at 292E-2N in a large body of andesitic greenstone, and amphibolite which strikes along the baseline on the western portion of the property. Mottled, spotted, hornblende-epidote-diopside amphibolite occurs within this body at 282E and 285E on the baseline. On the eastern side of the property where outcrop is scarce Unit (2b) has been tentatively mapped with the aid of magnetic survey data. Pyrite and pyrrhotite are concentrated in greater amounts in the andesitic greenstone and amphibolite of Unit (2b) than in Unit (2a).

Unit (3a) occurs in the southern part of the property. It consists of dark grey biotite-chlorite schist which grades to phyllite in places, characteristic rusty spots in these rocks are caused by weathering of coarse-grained biotite porphyroblasts.

Locally Unit (3a) has been differentiated from Unit (3c) because of its phyllitic character, however a strong possibility exists that these rocks (3a) are derived from the same volcanic rocks of Unit (3c).

One belt of Unit (3a) located within the south-central grid area, appears to be completely contained within Unit (2a). It is not known at this point whether this relationship is stratigraphically or structurally controlled.

The southeastern portion of the property has been tentatively mapped as Unit (3a) because of the lack of outcrop in the area and the known recessive weathering properties of the phyllites.

The southern part of the property is underlain by a large belt of greenstone. Within these greenstone belts there are two relic volcanic complexes composed of Units (3d), (12a), (12b), and (13). These complexes are of potential significance becuse of the known proximity of volcanic complexes of similar nature to the sulphide deposits of Swim, Vangorda, and Grum.

Present theories of sulphide deposition suggest that these volcanic complexes may indicate volcanogenic-effusive centers that could have been sources for mid-proximal to distal deposition of the Anvil area sulphide deposits.

Unit (3c) crops out as large elongate, sometimes lensoid bodies. Dominant rock types are medium-green foliated actinolite schist and andesitic greenstone, frequently containing disseminated pyrite and pyrrhotite. Pale-green crystalline limestone occurs as small isolated bodies within Unit (3c).

Unit (3d) crops out on the southeast corner of the property as massive, rusty weathering, well jointed rhyolitic quartz-feldspar porphyty. Small phenocrysts of clear-quartz and white feldspar occur with disseminated pyrite and pyrrhotite in a fine-grained siliceous ground mass. Although contacts with other rocks have not been observed Unit (3d) is tentatively assigned an Ordivician-Silurian age because of its close association with the greenstones of this age throughout the Anvil Range.

Unit (12a) consists of bodies of pyroxenite which often exhibit cataclastic texture where axial plane cleavages produced by two periods of regional deformation partially penetrate these competent rocks along their borders. Near these borders the pyroxenite is altered to a poorly developed hornblende-plagioclase-quartz gneiss. Phenocrysts of pyroxene are altered to hornblende and chlorite. The groundmass is altered to gneiss consisting of chloritized biotite, plagioclase altered to epidote, calcite, minor apatite, K-feldspar, and relict ilmenite (see Fig. 6). Towards the centers of the pyroxenite bodies alteration generally consists of slight serpentinization.

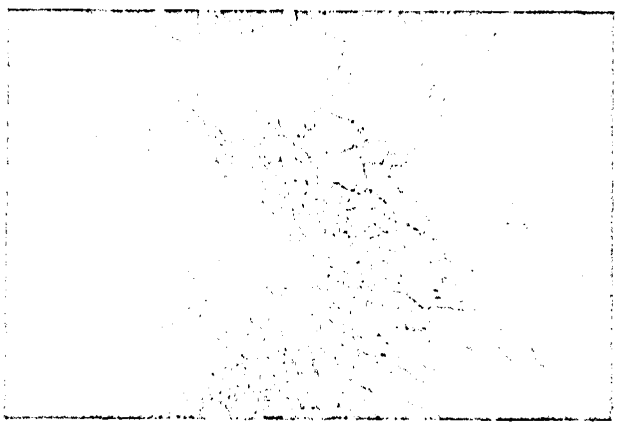


Figure 6 0.5 mm.
Thin-section of pyroxenite, Unit (12a), showing magnetite and relict ilmenite (Plain light).

Unit (12b) consists mainly of gabbro occasionally grading to a hornblende diorite. Alteration occurs only near the contacts between Unit (12b) and other surrounding rocks. It is characterized by a strong foliation which sometimes develops into a schistosity.

Both units (12a) and (12b) frequently contain minor amounts of disseminated magnetite near their borders.

Unit (13) consists of saussuritized hornblende diorite porphyry. Phenocrysts of hornblende have been altered to chlorite and biotite. Disseminated pyrite is abundant in a rusty coloured groundmass of chloritized hornblende and saussuritized plagioclase.

In the southeast corner of the property where outcrop is scarce, contacts between units in the greenstone belt have been tentatively mapped by differentiating magnetic susceptibilities of the rock types. Although mapped as younger rocks, Units (12a), (12b) and (13) may actually be much older because of their close association with Units (2) and (3). Because of their competency, the rocks of Units (12a), (12b), and (13) are not transposed by the axial plane cleavages associated with the early phases of deformation which pervaded throughout the area. Thus these rocks appear relatively undisturbed; a property characteristic of much younger rocks in the area.

The youngest rocks on the property are those of Unit (11), which form a cupola from the Anvil Batholith on the eastern portion of the property. The rock type in the vicinity of the property is dominantly an equigranular fine-grained granodiorite.

Dykes up to 20 feet wide of Unit (11) intrude along schistosity planes near contacts between Units (1c) and (2) and the Anvil Batholith.

Structure

Rocks underlying the property are affected by at least three and possibly four periods of deformation.

Three axial plane cleavages and related schistosities have been developed in the area. The cleavage and schistosity associated with the first period of deformation (called S_1) has destroyed any bedding relationships in the rocks. This cleavage and schistosity is dominant near the crests of folds produced by the second period of deformation.

The second period of deformation is represented by a very strong axial plane cleavage and schistosity (S_2) which pervades throughout the Anvil Range. S_2 completely transposes S_1 on the flanks of second deformation folds such that only remnants of S_1 can be seen between major S_2 surfaces but S_2 is much less dominating over S_1 at crests of these folds.

The third period of deformation is represented by a very weak cleavage and schistosity (S_3) which is related to northeast trending folds that gently warp the S_2 surfaces.

Intersections of S_1, S_2 and S_3 produce crenulations which are best observed on phyllitic partings.

A fourth period of deformation which trends east-west has gently warped S_2 surfaces such that they appear to dip less steeply to the south in the northern portion of the property.

Two stages of folding are present on the property (see Plate 11). First stage folds are related to the S_2 axial plane cleavage. Their axes trend southeasterly and plunge gently in that direction. Second stage folds are related to the S_3 cleavage and their axes trend northeasterly.

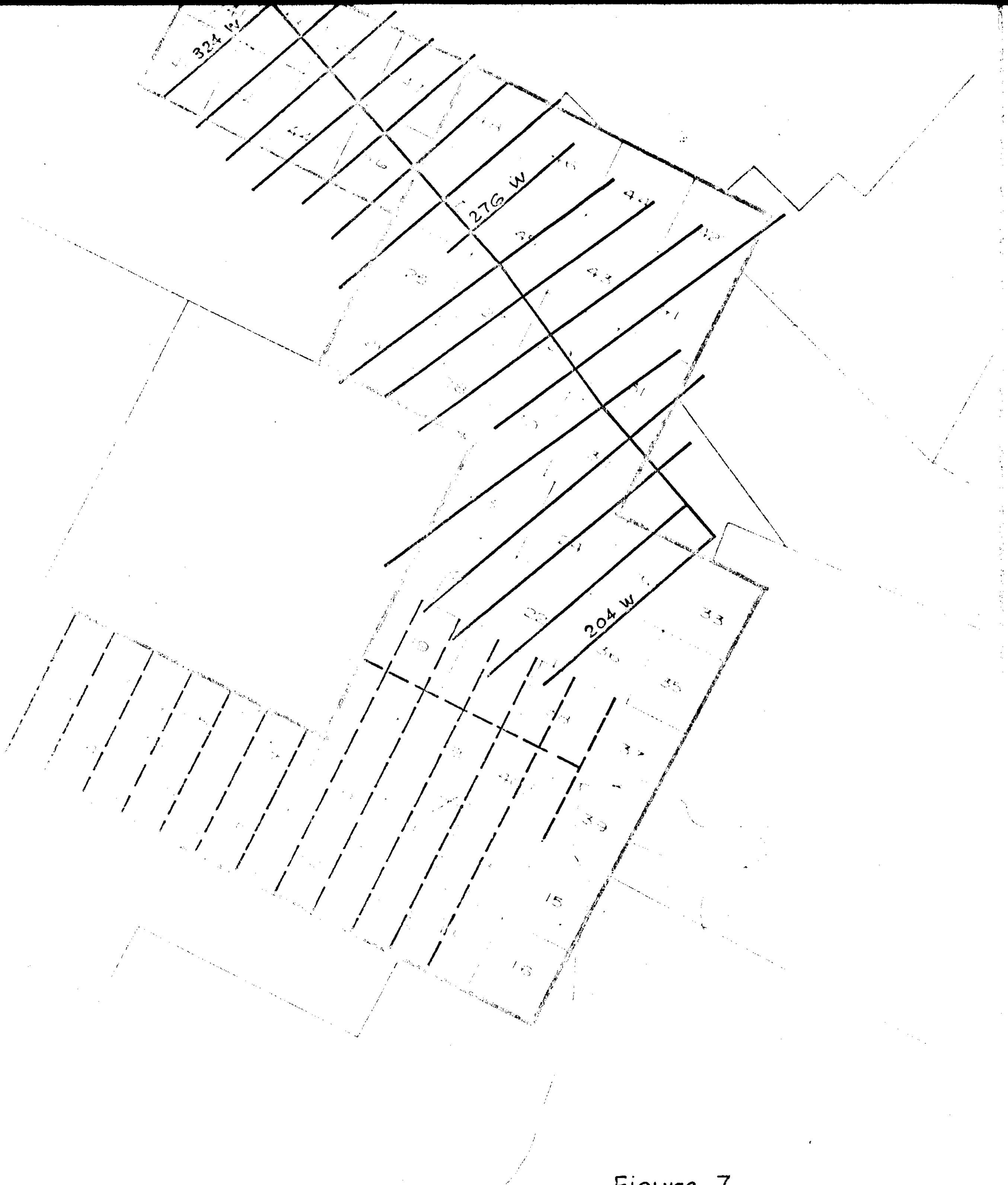
First stage folds are mapped in the northern portion of the property. Rocks of Units (1c) and (2a) are folded into an overturned (to the north) anticline and syncline. Thin isolated slivers of Unit (2a) occur along the contact of the Anvil Batholith. These are interpreted as having been dragged down in the above mentioned syncline but it should be noted that these slivers may have been faulted into place. No concrete evidence of such faulting was found in the field. Smaller parasitic folds seen in outcrop indicate that these first stage folds are isoclinal.

Second stage folds were mapped using S_2 strike variations and the attitudes of related quartz rods which occur frequently throughout Units (2) and (3). These folds are mainly gentle anticlinal warps with very narrow crests, as is suggested by smaller parasitic folds associated with the quartz rods seen in outcrop. This second later stage of deformation has, to a limited extent, affected all previous structures.

Several large faults and a few smaller ones occur on the property. The nature of the faulting is predominantly dip-slip. A central block has been slightly uplifted relative to east and west blocks. These faults are expressed topographically by linear breaks in slope and by large bluffs on the east and west sides of the property. The faulting may be associated with the last stage of folding where the narrow crests of the anticlines provided structural breaks along which the faults could occur.

LINE CUTTING

An old grid system utilized for a previous gravity survey by Hecla Mining Company was brushed out and extended by line cutters of Eastern Associates, hired on a contractual basis from Whitehorse. The grid system consists of a 12,800 foot long base line trending at 139° with perpendicular crosslines of varying length spaced 800 feet apart along the base line. Survey control was maintained by picket and chain methods with periodic line bearing checks by Sylva compass. Picket stations were established on the cross lines at 100-foot intervals. Lines from the old CROWN claims, still in good condition with pickets still standing, were utilized to cover the southern portion of the property. A total of 18.4 miles of line were either cut or brushed out (see Fig. 7).



1975 Mabel Grid

1972 Crown Grid

Figure 7

VANGORDA 75 PR

GRID LOCATION MAP

WELCOME NOR

GETTY MINING P

MABEL 1-48 & EVA

105-K

GEOCHEMICAL SURVEYS

1. Method of Survey

After close study of geochemical evidence leading to the discovery of the Anvil massive sulphide deposit, it was decided to modify the geochemical sampling method to better adapt to the search for deep-seated sulphide deposits.

Sampling was confined to the base of slope contours, sidehill silt seepages, stream sediments and frost boils in order to tap possible drainage emergence from deep-seated sources.

Previous results from other 'grid controlled' geochemical surveys were available for review and revised interpretation.

All soil samples were obtained with a prospector's grub hoe, which was found adequate as a tool for cutting through heavy layers of organic material overlying the soil.

Certain areas determined as being anomalous in lead, zinc, and copper from previous surveys were further investigated with rock geochemistry to determine if the geochemical anomalies in soils were either in situ or transported. All geochemical samples were collected in Kraft brown paper bags and shipped for testing to Acme Analytical Laboratories in Ross River, Yukon.

2. Method of Analysis

All samples were analysed by Acme Analytical Laboratories Ltd. at Ross River. 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. Rock samples were crushed and pulverized before undergoing this process. Samples were then diluted, clarified for 20 hours and then tested for copper, lead and zinc content on an atomic absorption spectrophotometer. The 'AA' unit used was a Perkins Model 305B and 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.

All results were grouped under soil, silt, rock analyses for each of Cu, Pb and Zn. Data for each of these categories was plotted later onto graphs of trace element quantity (ppm) versus cumulative percent.

A partitioning procedure (see A.J. Sinclair 1973) was used to separate two populations, one being anomalous and the other being background. The overlap of these two populations was determined and thresholds chosen arbitrarily to isolate three 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.

Separate maps were prepared using a scale of 1" = 400 ft., showing values obtained for copper, lead and zinc. Values were color coded to aid in distinguishing areas anomalous in copper, lead, and zinc.

4. Interpretation of Results

Study of the statistical analysis for copper content in soils sampled during the 1975 season by the Vangorda project in the Anvil District reveals that an anomalous population whose threshold value is 41 ppm (arbitrarily chosen) overlaps with a lower background population as illustrated in Fig. 8. The overlap of these two populations, again arbitrarily chosen, occurs between 41 ppm and 55 ppm. Samples obtained with values in this range (41-55 ppm) are considered to be anomalous only if other samples collected in the immediate vicinity of these yield distinctly anomalous values; otherwise samples with values in the 41-55 ppm range are considered as samples in areas of high background geochemistry.

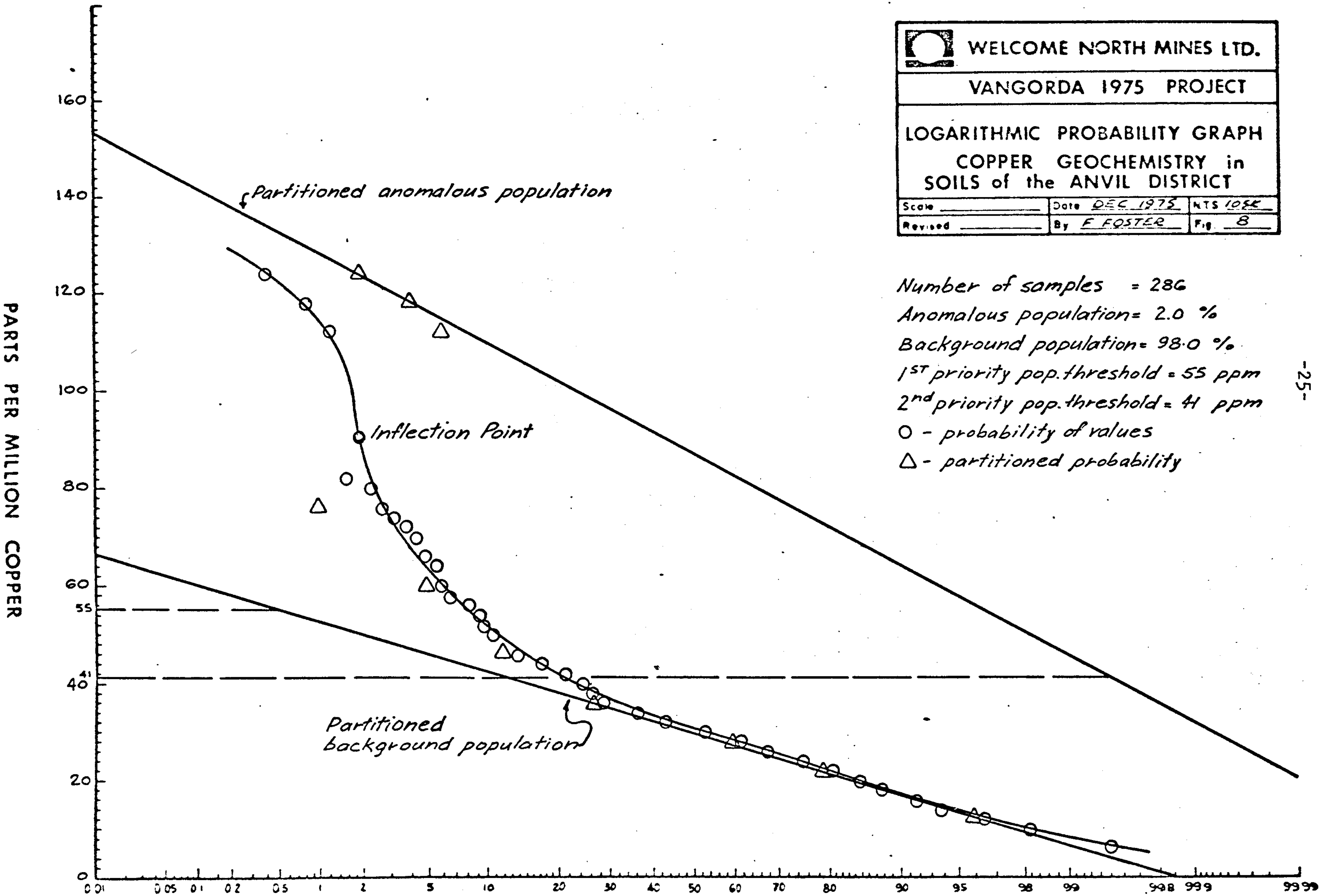
Inspection of the statistical analysis for copper content in silts sampled in the Anvil District (Fig. 9) reveals that three geochemical populations, such as those outlined above for copper in soils, exist and that the overlap between the anomalous and background populations ranges between 30 to 34 ppm.

Inspection of statistical analysis for lead content in soils (Fig. 10) reveals that as above three populations exist and that the overlap between the anomalous and background populations ranges between 38 to 49 ppm.

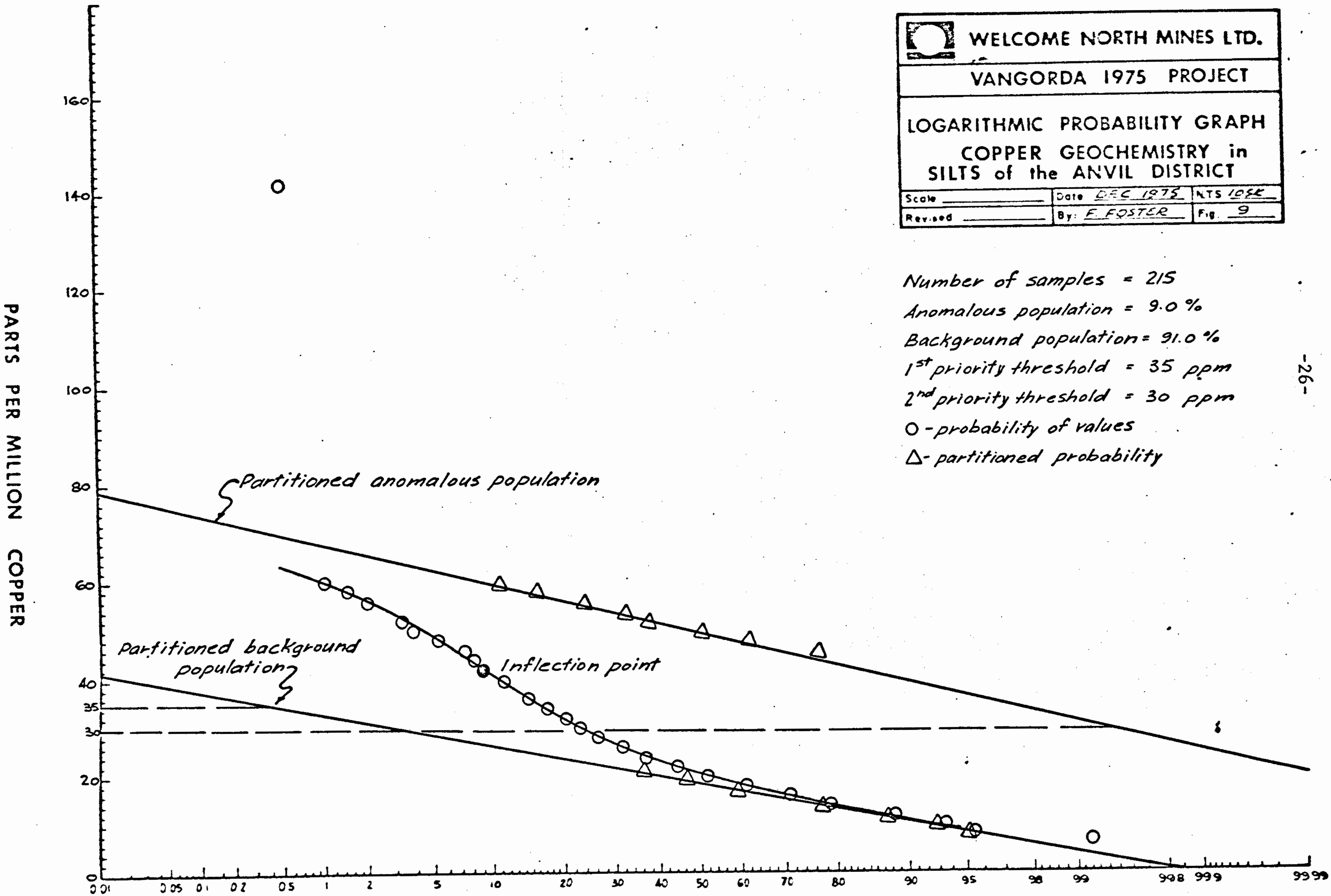
With reference to lead content in silts, the statistical analysis for this (Fig. 11) reveals three populations exist such as described above for copper in soils and silts and lead in soils. Values greater than 34 ppm are anomalous, values in the range 26 to 33 ppm are either anomalous or high background, and values less than 25 ppm are background.

The statistical analysis for zinc content in soils (Fig. 12) shows three populations as well. Values greater than 100 ppm are anomalous, values in the range 90 to 100 ppm are either anomalous or high background, and the values less than 89 ppm are background.

Examination of the statistical analysis for zinc content in silts (Fig. 13) shows that a major background populations exists. The partitioning procedure cannot be applied in this case due to there being such a small percentage of anomalous samples. The configuration of the logarithmic probability plot shown in Fig. 13 suggests that the values greater than the arbitraily chosen threshold of 110 ppm contain high background values as well as anomalous values. Unfortunately there is



WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
COPPER GEOCHEMISTRY in SOILS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By F FOSTER
Fig. 8
Number of samples = 286
Anomalous population = 2.0 %
Background population = 98.0 %
1ST priority pop. threshold = 55 ppm
2nd priority pop. threshold = 41 ppm
○ - probability of values
△ - partitioned probability
Partitioned anomalous population
Inflection Point
Partitioned background population
PARTS PER MILLION COPPER
160
140
120
100
80
60
55
41
40
20
0
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99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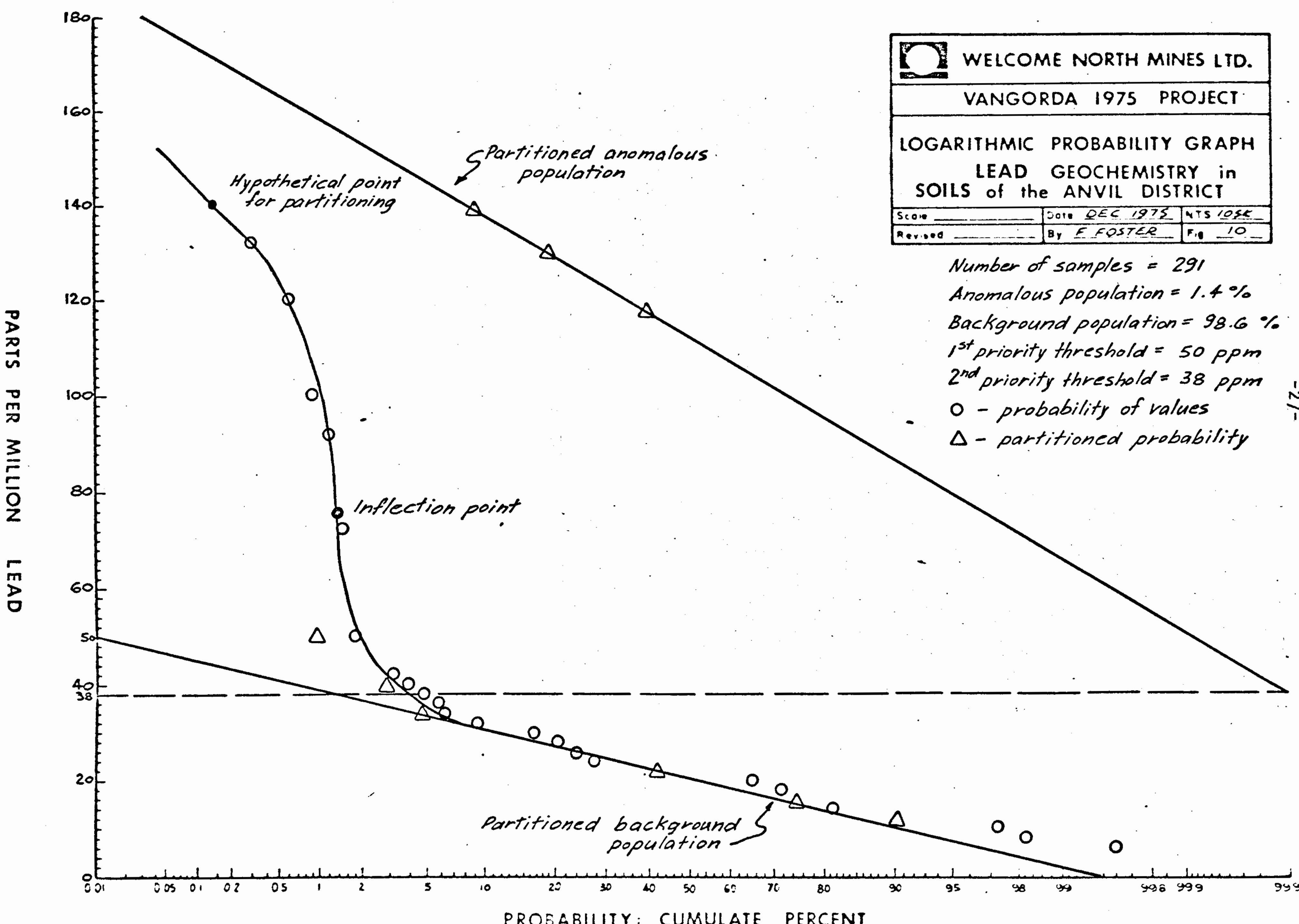
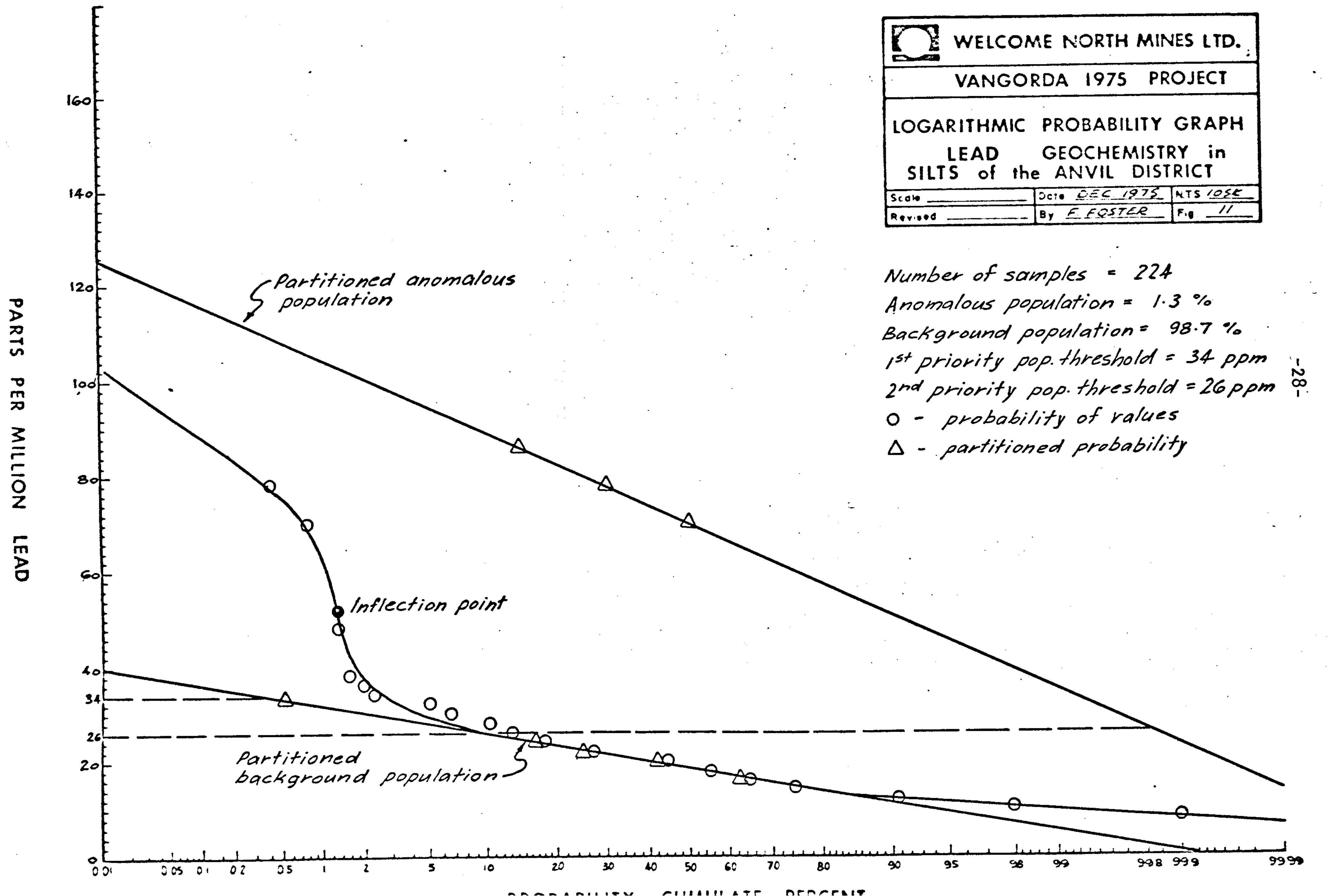
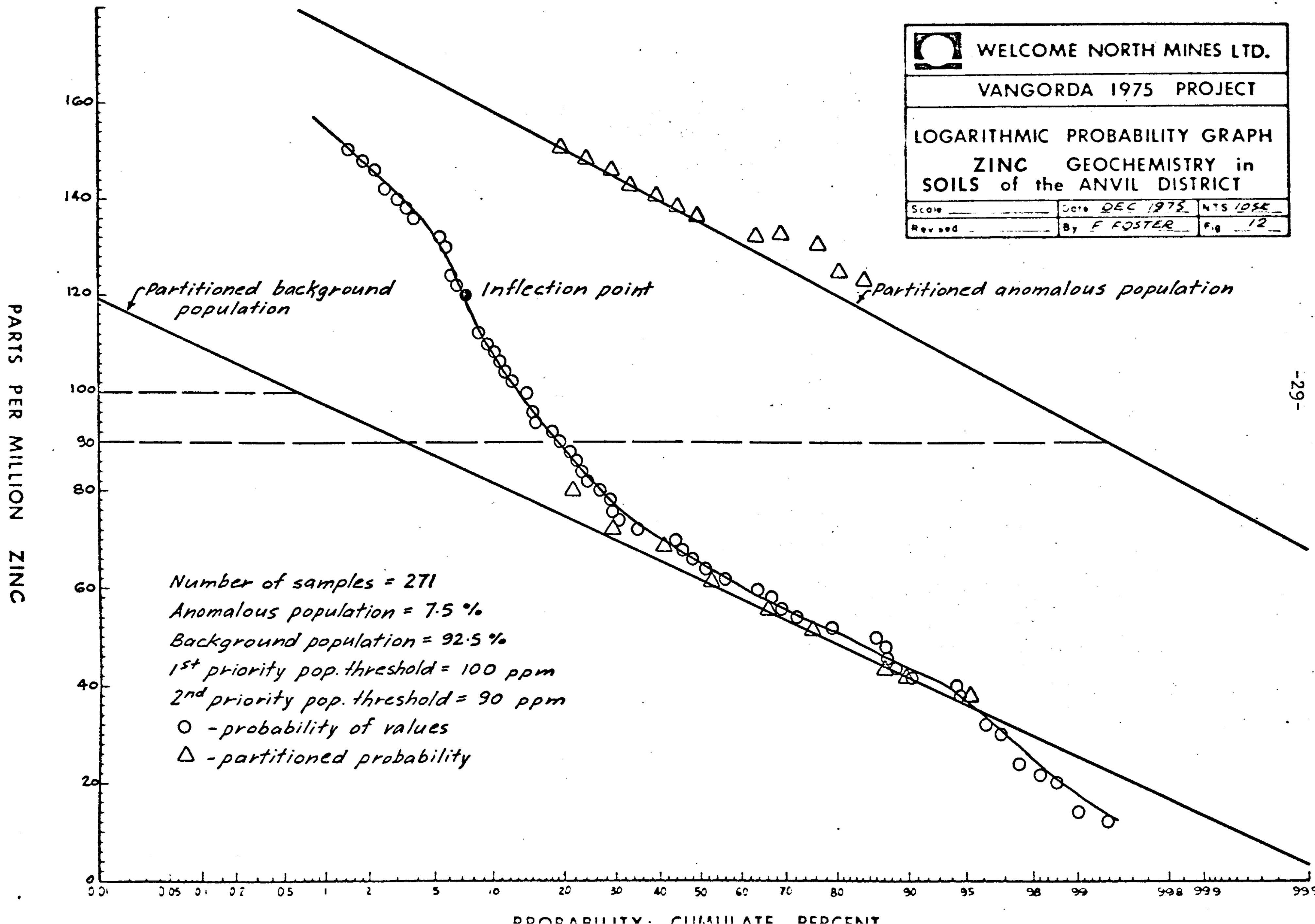
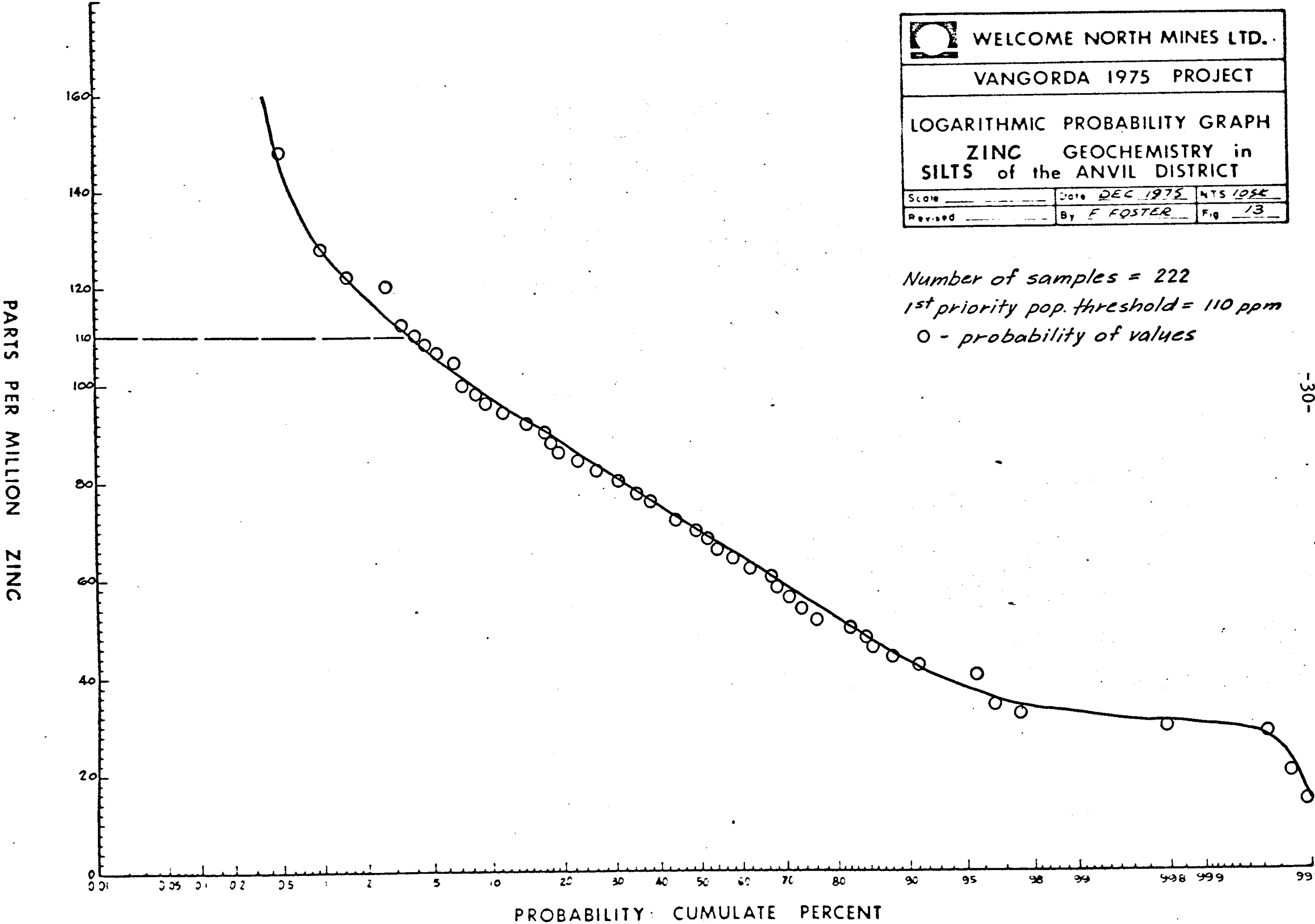
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
COPPER GEOCHEMISTRY in SILTS of the ANVIL DISTRICT
Scale
Revised
Date DEC 1975
By: F. FOSTER
NTS 105K
Fig. 9
Number of samples = 215
Anomalous population = 9.0 %
Background population = 91.0 %
1st priority threshold = 35 ppm
2nd priority threshold = 30 ppm
O - probability of values
Δ - partitioned probability
Partitioned anomalous population
Partitioned background population
Inflection point
PARTS PER MILLION COPPER
160
140
120
100
80
60
40
35
30
20
0
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99


WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
LEAD GEOCHEMISTRY in SOILS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By F FOSTER
Fig 10
Number of samples = 291
Anomalous population = 1.4 %
Background population = 98.6 %
1st priority threshold = 50 ppm
2nd priority threshold = 38 ppm
○ - probability of values
△ - partitioned probability
Partitioned anomalous population
Hypothetical point for partitioning
Inflection point
Partitioned background population
PARTS PER MILLION LEAD
PROBABILITY: CUMULATE PERCENT
180
160
140
120
100
80
60
50
40
38
20
0
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99



WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
LEAD GEOCHEMISTRY in SILTS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105E
Revised
By E. FOSTER
Fig 11
Number of samples = 224
Anomalous population = 1.3 %
Background population = 98.7 %
1st priority pop. threshold = 34 ppm
2nd priority pop. threshold = 26 ppm
○ - probability of values
△ - partitioned probability
Partitioned anomalous population
Inflection point
Partitioned background population
PARTS PER MILLION LEAD
160
140
120
100
80
60
40
34
26
20
0
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99


WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
ZINC GEOCHEMISTRY in SOILS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By F FOSTER
Fig 12
Partitioned background population
Inflection point
Partitioned anomalous population
Number of samples = 271
Anomalous population = 7.5 %
Background population = 92.5 %
1st priority pop. threshold = 100 ppm
2nd priority pop. threshold = 90 ppm
○ -probability of values
△ -partitioned probability
PARTS PER MILLION ZINC
PROBABILITY: CUMULATE PERCENT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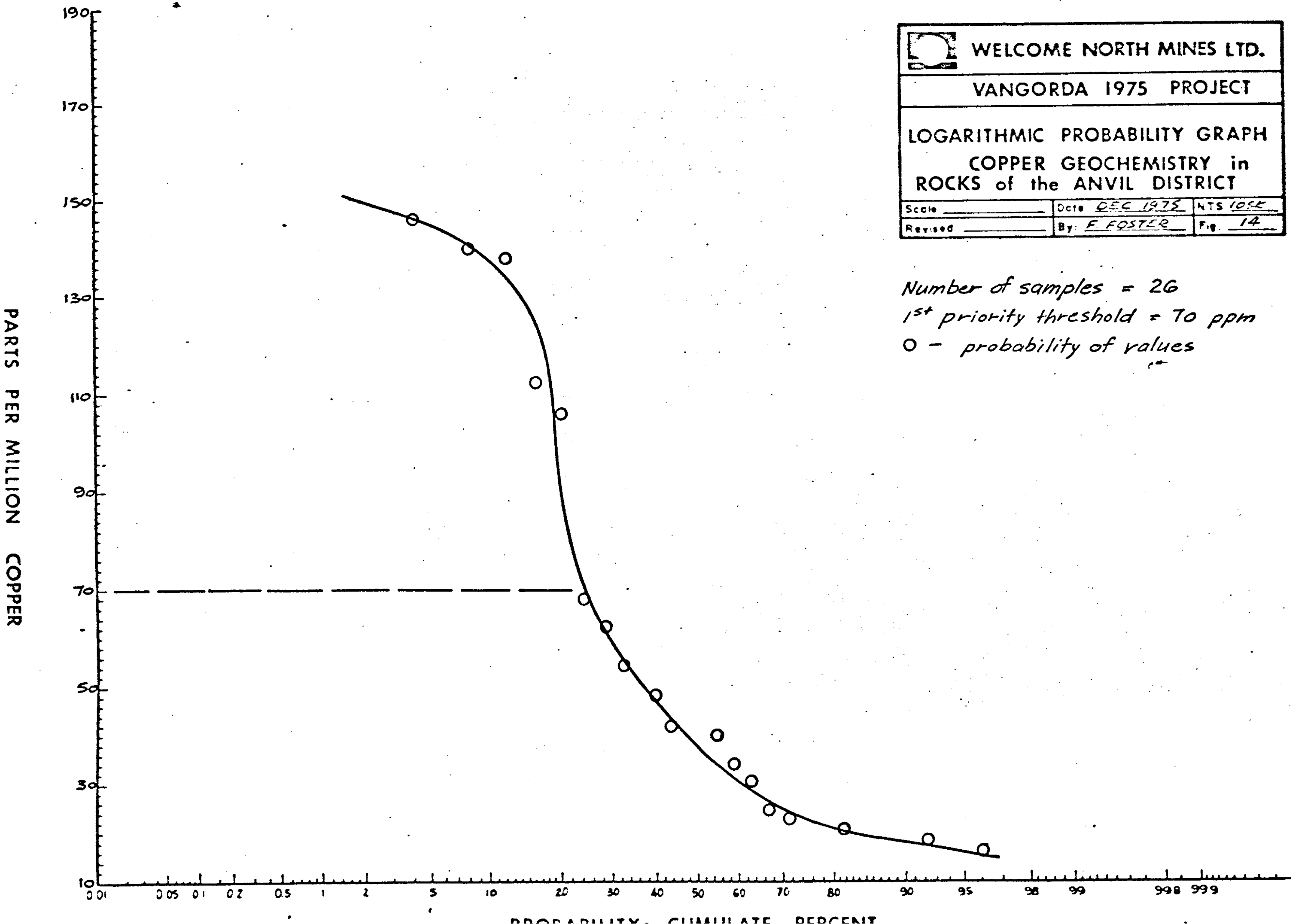
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
ZINC GEOCHEMISTRY in
SILTS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By F FOSTER
Fig 13
Number of samples = 222
1st priority pop. threshold = 110 ppm
o - probability of values
PARTS PER MILLION ZINC
160
140
120
110
100
80
60
40
20
0
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99
PROBABILITY CUMULATE PERCENT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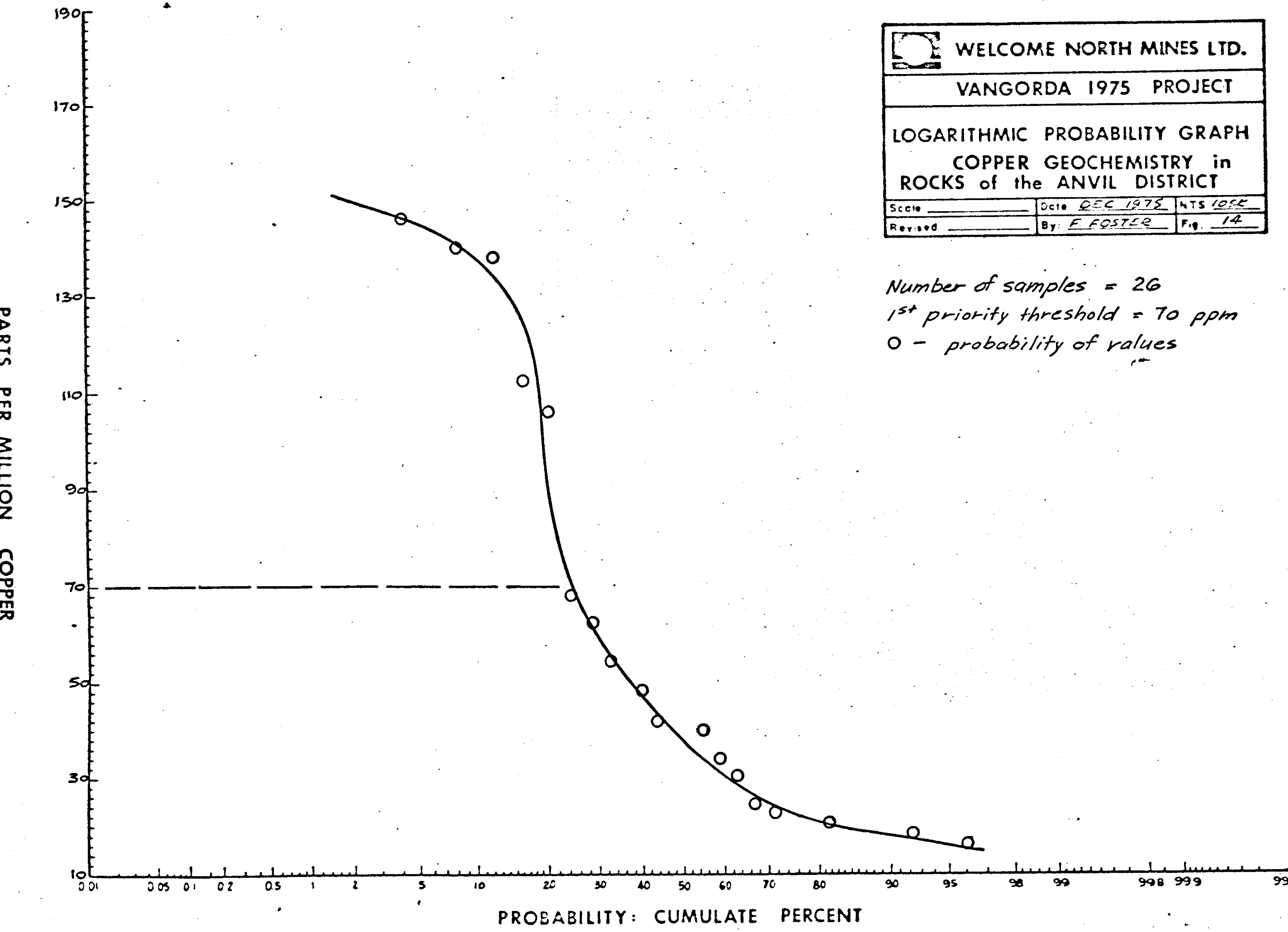
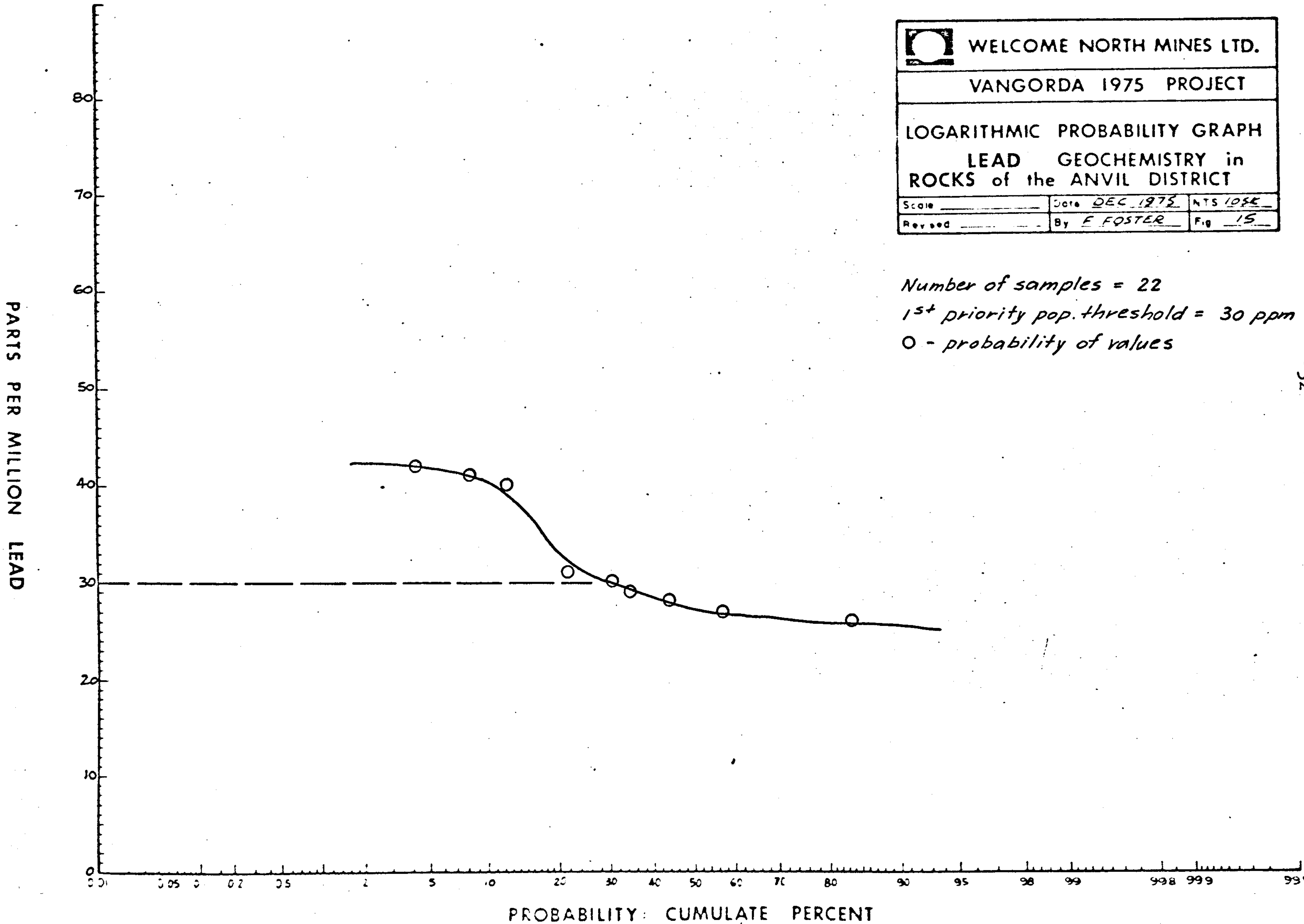
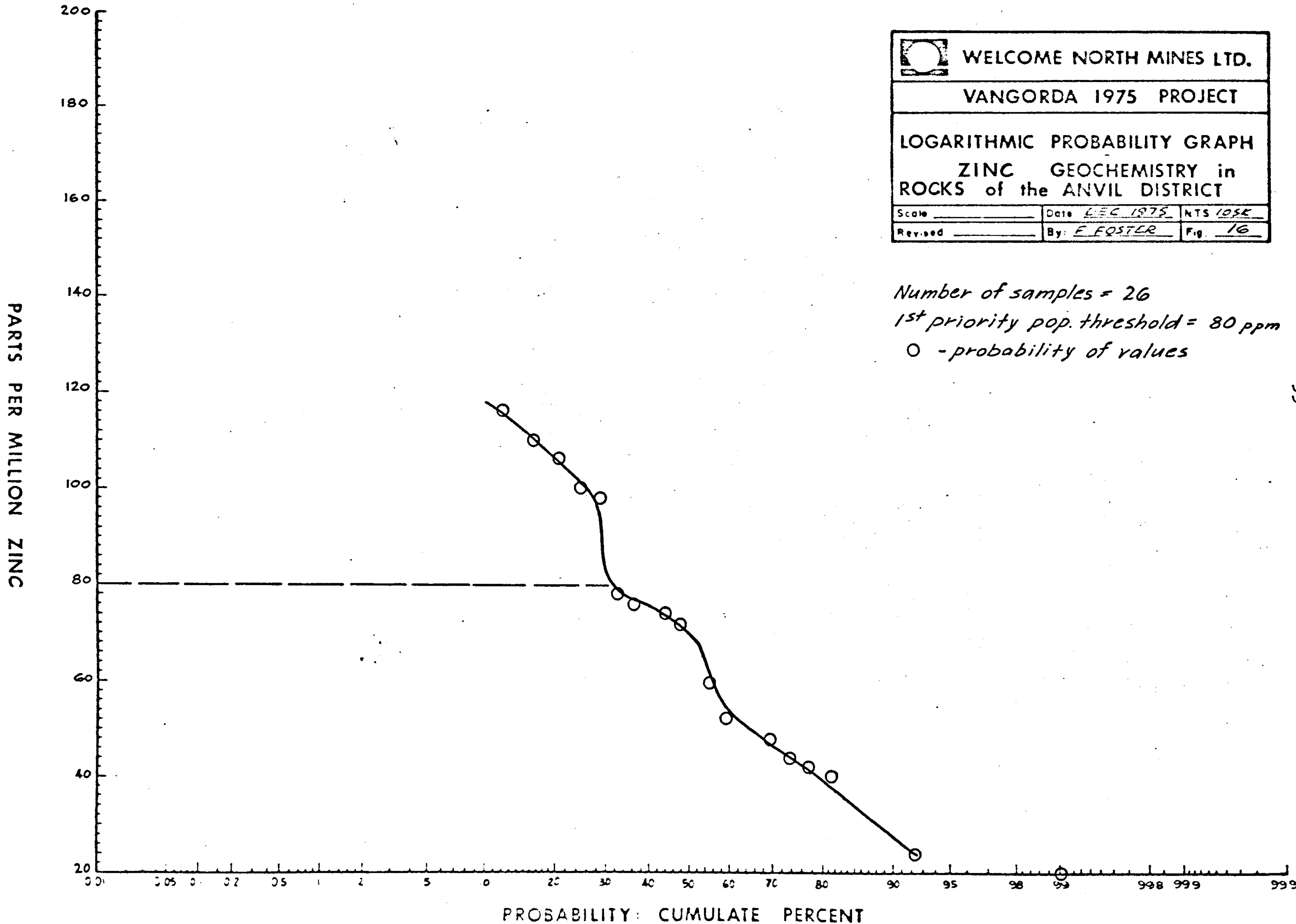
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
COPPER GEOCHEMISTRY in ROCKS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By: F. FOSTER
Fig. 14
Number of samples = 26
1st priority threshold = 70 ppm
O – probability of values
PARTS PER MILLION COPPER
190
170
150
130
110
90
70
50
30
10
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99



WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
COPPER GEOCHEMISTRY in ROCKS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By: F. FOSTER
Fig. 14
Number of samples = 26
1st priority threshold = 70 ppm
O – probability of values
PARTS PER MILLION COPPER
190
170
150
130
110
90
70
50
30
10
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99
PROBABILITY: CUMULATE PERCENT


WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
LEAD GEOCHEMISTRY in ROCKS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105E
Revised
By E FOSTER
Fig 15
Number of samples = 22
1st priority pop. threshold = 30 ppm
O - probability of values
PARTS PER MILLION LEAD
80
70
60
50
40
30
20
10
0
PROBABILITY: CUMULATE PERCENT
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99


WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
LOGARITHMIC PROBABILITY GRAPH
ZINC GEOCHEMISTRY in ROCKS of the ANVIL DISTRICT
Scale
Date DEC 1975
NTS 105K
Revised
By: F FOSTER
Fig. 16
Number of samples = 26
1st priority pop. threshold = 80 ppm
O - probability of values
PARTS PER MILLION ZINC
200
180
160
140
120
100
80
60
40
20
PROBABILITY: CUMULATE PERCENT
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99

insufficient data to distinguish the highest possible background value and all values greater than 110 ppm are thus considered as anomalous.

Insufficient data was collected for a proper statistical analysis of the copper, lead, and zinc content in rocks sampled in the Anvil District, therefore threshold values of 70, 30 and 80 ppm for copper, lead, and zinc, respectively were arbitrarily chosen by visual inspection of the logarithmic probability plots (Fig. 14, 15, and 16).

a) Copper

A geochemical expression of anomalous copper in soils is contained within the control portion of the grid area between lines 236 and 292W (see Plate 2).

The strongest copper responses occur in the vicinity of station L268 8S (rock chip yielding 780 ppm copper and frost boil yielding 124 ppm copper) and in the vicinity of L276 2S (sidehill seep yielding 74 ppm copper). Weakly anomalous expressions occur around the perimeter south of the anomalous area on lines 268W and 260W and north of the anomalous area between lines 244W and 268W. Weakly anomalous silts were also obtained from the tributary of Rose Creek in the eastern portion of the property which drains part of the anomalous area mentioned above.

The anomalous copper expression described above is situated over Unit (2a) as described within this report (See Plate 11). Although Unit (2b) has not been mapped in detail within Unit (2a) underlying the anomalous copper zone, it is suspected that the higher copper content of these amphibolitic and andesitic greenstones as found elsewhere in the Anvil area is probably suspect as a cause for the anomalous copper in soils. Further rock chip geochemical evaluation is required on the property to fully substantiate this postulation.

b) Lead

Four restricted areas anomalous in lead geochemistry occur on the property (see Plate 3). The strongest expression of lead occurs in biotite-muscovite schist [Unit (1c)] between lines 252W and 260W at 16N. This expression (soil samples yielding up to 132 ppm) was obtained from sampling frost boils within an area previously outlined as being weakly anomalous in copper.

Sidehill seeps outlined a second area anomalous in lead over calc-silicates [Unit (2a)] near their contact with Unit (1c). This area is located on line 244W between 3N and 4N.

Several samples anomalous in lead were found over calc-silicate [Unit (2a)] on line 268W just south of the baseline along the top of the cliff overlooking Anvil Creek.

A fourth area anomalous in lead is indicated by a sidehill seep over biotite-muscovite schist [Unit (1c)] yielding 70 ppm lead near L276W 15N. Silt samples weakly anomalous in lead were obtained from the tributary of Rose Creek which also yielded weakly anomalous copper values.

The anomalous lead values obtained from two frost boils between lines 252W and 260W at 16N are of prime interest. They are within Unit (1c) which contains Unit (1b), the Faro sulphide horizon. Although no significant geophysical expressions are directly coincident with the anomalous lead, the target is of importance as an upwelling of base metal ions along schistosity planes from a deep-seated source is indicated. This is further supported by downslope and down schistosity side-hill seep emergence of anomalous leads on line 294W, stations 3N and 11N.

c) Zinc

Anomalous zinc values were obtained from frost boils over biotite-muscovite schist [Unit (1c)] located between lines 252W and 260W, 2000 feet north of the baseline (see Plate 4) and at L268W 21N. These samples all occur within the area previously mentioned as being anomalous in lead and weakly anomalous in copper.

Anomalous zinc values are also obtained at L260W 20S and 268W 13S over calc-silicate [Unit (2a)] and are coincident with previously mentioned copper and lead anomalies.

Previous geochemical surveys carried out by New Far North Explorations Limited and Anvil Mining Corp. Ltd. indicated an area anomalous in lead, which was not confirmed by the survey described above, in the vicinity of L236 20S.

It should be noted that the poor geochemical response in silts from the streams draining the property is due to the immobility of the metal ions within an acid environment which prevails around the calc-silicate rocks.

GEOPHYSICAL SURVEYS

1. Instruments Used

For the magnetometer survey, a Sharpes MF-1 magnetometer was used. The instrument is hand-held and measures the vertical magnetic component by use of an oil-dampened fluxgate which automatically levels itself in the direction of the vertical field. The magnetometer is of light weight and a direct read-out of gamma values can be obtained quickly.

The electromagnetic survey was carried out with a Crone CEM dual frequency unit. The Crone is of the inductive type and may be used either as a horizontal or vertical loop apparatus. Measurements are made of the resultant dip angle of the field and the width of null or our of phase component. It is designed to be operated with a maximum coil spread of 600 feet on frequencies of 390 and 1830 cycles per second with no interconnecting cables. The effective depth penetration is 300 feet for a horizontal conductor with maximum coil spread (no skin effect allowance) and 100 feet for a vertical conductor. The effective lateral coverage is a direct function of the spread under ideal conditions. The equipment was chosen in order to give reliable information on the attitude and configuration of a conductor, the physical properties of the host rock, dimensions of the conductor and results free from error due to topographic relief.

2. Method of Survey

a) Magnetometer Survey

Prior to the actual magnetometer survey, readings were taken along the central base line at cross line intersection points. These stations were looped and re-read every hour as a means of controlling drift and diurnal variations. With base stations of an established value serving as a means of controlling drift and diurnal variations, a rapid and precise check was kept on magnetic variations and the entire survey was thus kept on a relative basis during day to day operation. Each cross line was read with re-checks at the base station within every hour, this method provided an internal control for detecting diurnal and drift variations. The survey was done by one operator using the same instrument.

b) Electromagnetic Survey

All surveys were run with horizontal loop configuration and 200 foot coil spacing in order that highest response could be obtained from flat lying sulphide bodies. Readings at 1830 cps were taken at each station. The coil configuration was not adaptable to conditions of conductive overburden and maximum response from such was expected. All traverses were made by the "in line method" and done over the same grid as used for the magnetometer surveys. In some cases longer spacing (300 feet) was adopted for better resolution of conductors, within areas of known gravity anomalies. The two-man EM crew did all their ground work in coincidence with the magnetometer crew.

3. Treatment of Data

a) Magnetic Results

Magnetic results were corrected in the field for diurnal and drift variations by the field operator. The final gamma values were then plotted on a grid plan using scale of 400 feet to 1 inch. This data was presented to the party chief who profiled and contoured the data on overlay material in order that he could remain familiar with day to day results and progress of the survey, direct its course, and have results available for comparison with electromagnetic and geological-geochemical data. Magnetic data is presented in this report on maps of 1" = 400 ft. scale showing gamma value profiles and contoured results (see Appendix). All maps show major drainage features and locations of mineral claim posts.

b) Electromagnetic Results

All results as derived in the field were plotted each night by the EM operators on a grid plan using a scale of 1 inch = 400 feet. Results were presented to the party chief for inspection, profiling and preliminary contouring in order that this data be compared with the other surveys and the course of the electromagnetic survey be directed on a daily basis. Final plotting was done on maps of 1" = 400 ft. scale similar to those used for the magnetic maps. Electromagnetic data is presented in this report showing values profiled and contoured.

4. Interpretation of Results

a) Gravity Survey

A portion of the Mabel Grid area was surveyed by gravimetric methods for Hecla Mining Company under contract by Overland Exploration Limited in 1970. Hecla formerly held claims in the area of the now existing MABEL Group. The survey does not completely cover the grid area and results are missing from certain specific lines (252W to 268W). Previous experience with gravity surveys performed by Overland has unfortunately led to the conclusion that their survey results were not always reliable due to use of faulty gravity meters. In this regard the gravity results over the MABEL grid must be considered suspect.

Four residual gravity anomalies designated A, B, C, D (Plate 10) have been delineated.

Anomaly A is a 1.0 milligal expression centered at station 244W-6N and is contained within Units (1c) and (2a). Previous bulldozer trenching by Hecla, carried out at 244W-10N exposed typical biotite-muscovite quartz schist of Unit (1c) within the central region of this anomaly.

The residual gravity profile suggests a northerly dipping causative mass, with a depth to centre of 500 feet. Geologically, this interpretation suggests that a westerly extension of outcropping Unit (12a) pyroxenite should be the causative mass.

As the anomaly is also bounded to the east by a northerly trending fault, it could also be due to a density contrast between Unit (11) east of the fault and Unit (1c) west of the fault.

Anomaly B is a residual gravity feature which has a maximum response of 0.9 mg. in the vicinity of 276W-2S. This area is underlain by a greenstone body [Unit (2b)], there is also a fault trending through this anomalous area which may cause the apparent mass deficiency exhibited along the southeast flank of the residual anomaly (see Plate 10).

Anomaly C is located within the southeastern part of the grid area between lines 212W and 244W, south of the baseline. It is double peaked and of low magnitude, 0.5 mg. The eastern portion of the anomaly overlies Unit (12a) and indeed may represent a westerly sub-outcropping extension of this pyroxenite body.

Anomaly D is an isolated, 0.5 mg., expression located between lines 284W and 292W, north of the baseline, it is entirely within Unit (1c). Examination of this residual profile (see Plate 9) suggests that the anomalous area may indeed represent background, its southern flank being the gradient associated with Anomaly B.

b) Electromagnetic Survey

The electromagnetic survey results are not considered to be significant insofar as that limited depth penetration was achieved with the 200 foot coil spacing used for the survey.

Profiled 1830 Hz dip angles (see Plate 7) reveal no geophysical targets of potential interest. Several obvious conductive features are summarized below.

1) L300W to 332W in the vicinity of 14S. A pronounced negative dip angle, east-west trend, is coincident with a major topographic break and drainage feature. The conductive trend likely represents water saturated overburden.

2) L236W to L244W, 6S. A moderate negative dip angle response (-4 to -14 degrees) was obtained over Unit (2a), however re-surveying of these lines with 300-foot coil spacing failed to repeat the anomaly.

3) L292W to L308W, 8N. A reasonably well defined negative response was obtained over a contact between Units (1c) and (2a). This conductive trend flanks a weak gravity anomaly (Anomaly D) and is in the vicinity of a slightly anomalous (lead) frost boil sample.

c) Magnetic Survey

Results from the ground magnetometer survey over the MABEL grid are of a uniform gradient and due to a lack of susceptibility contrast between the main underlying rock types the magnetic profiles (see Plate 5) are of little use in aiding geologic interpretations. Additional magnetic survey coverage from the JOE claims has been added to the MABEL magnetometer survey plan. These profiles reflect an underlying body of gabbro of Unit (12a).

Within the MABEL grid three local areas of magnetic relief may warrant further investigation. Reference should be made to Plate 6.

1) A magnetic anomaly of 500 gammas relief located between lines 276W and 284W, immediately north of the baseline, is coincident with the north flank of gravity Anomaly B. Both geophysical features are within chloritic schists of Unit (2b). It is possible that the magnetic response reflects underlying greenstone formations.

2) A 100 gamma spot high, located on line 224W, 4N is directly coincident with the peak response of gravity Anomaly A and a CEM conductive trend.

3) At the east end of the MABEL grid, between lines 204W and 228W, south of the baseline is outlined a large area of magnetic complexity with response in excess of 300 gammas. These anomalous features probably represent bodies of underlying Unit (12a).

RECOMMENDATIONS

On the basis of evaluation of geological, and to a lesser degree, geophysical and geochemical results obtained to date on the MABEL claims, further exploration is recommended. In accordance with the original exploration concept proposed for the property, a limited program of diamond drilling is warranted to test several target areas.

Six miles east of the MABEL claims, the Faro massive sulphide deposit, a moderately southwesterly dipping tabular body, elongate in a northwest-southeast direction, is hosted within Unit (1c). The up-dip extremities of the Faro deposit are in contact to the north with the Anvil Batholith. Unit (2a) overlies Unit (1) and outcrops to the south of the Faro sulphides. On the Faro claims Unit (2a) reaches a stratigraphic thickness of about 1000 feet. The structural and stratigraphic setting of the MABEL claims is remarkably similar to that of the Faro deposit.

Good potential exists on the MABEL for a deeply-seated massive sulphide body of Faro-type dimensions. The proximity of the Anvil Batholith, Unit (11), to the north and east of the grid area would limit the areal extent of sulphides in those directions. Sulphides hosted within Unit (1c) could be found as far west as line 300W on the property. As interpreted from geological cross sections massive sulphides would be found closest to surface in the vicinity of the crestal regions of the southeasterly plunging overturned anticline located 1800 feet north of the MABEL baseline. This geologic target area is further supported by the following geochemical/geophysical indications:

- weakly anomalous lead and zinc from frost boil soils and side-hill silt seepages sampled between lines 252W and 260W, north of the baseline.

- gravity anomalies A, B and D including probable extensions into the area of lines 260W and 268W, north of the baseline.
- weakly coincident electromagnetic and magnetic features.

Three diamond drill holes are recommended to initially test to depth the structural and stratigraphic position of Unit (1c). As the emphasis of this program will be to demonstrate the down-dip extent of the Faro host rock, little reliance should be placed on geophysical target testing until further geological control is gained through drill information. Drill cores obtained will be subjected to detailed petrographic study and geochemical analysis.

1. DDH 76M-1 (053°, -55°) proposed depth 1000 feet
   location - Mabel Grid Co-ord. 256W-7+50N
2. DDH 76M-2 (053°, -55°) proposed depth 1000 feet
   location - Mabel Grid Co-ord. 276W-2+00S
3. DDH 76M-3 (053°, -55°) proposed depth 1000 feet
   location - Mabel Grid Co-ord. 276W-8+00N

The location of all diamond drill holes at this time of writing, should be considered as tentative, contingent on further evaluation of geophysical profiles and geological sections as well as more sophisticated geological interpretation based on the logs of proposed holes 76M-1 and 76M-2.

Planned on-going work after initial diamond drilling will be entirely subject to up-dated model interpretation.

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Map: Dynasty Expl. Ltd., Rose Creek Area, 105K-5, Airborne Electromagnetic Survey, scale 1" - 1320 feet, Lockwood Survey Corp. 1965.

Map: Dynasty Expl. Ltd., Anvil District, 105K, Airborne Magnetometer Survey, scale 1" = 1 mile, Lockwood Survey Corp. 1965.

Map: Dynasty Expl. Ltd., Anvil District, 105K, Airborne Electromagnetic Survey, scale 1" = 1 mile, Lockwood Survey Corp. 1965.

LEGEND

Claim posts, as located on gov't claim map

Claim posts, as located in the field

Grid lines

WELCOME NORTH MINES LTD.

VANGORDA 1975 PROJECT

MABEL 1-48 & EVA 40-47 CLAIMS

GRID LOCATION MAP

Scale: 1 INCH = 400 FT.	Date: JUNE 1975	N.T.S. 105K5
Revised:	By: F. FOSTER	Plate 1

JOE BASE LINE #4
JOE BASE LINE #5
JOE BASE LINE #2
CROWN 45 TIE LINE
CROWN BASE LINE
ANVIL CREEK
ROSE CREEK
CAMP
BASE LINE
4800 N
4400 N
4000 N
3600 N
3200 N
2800 N
2400 N
2000 N
1600 N
1200 N
800 N
400 N
400 S
800 S
1200 S
1600 S
2000 S
2400 S
2800 S
3200 S
3600 S
4000 S
4400 S
4800 S
5200 S
332+00 W
324+00 W
316+00 W
308+00 W
300+00 W
292+00 W
284+00 W
276+00 W
268+00 W
260+00 W
252+00 W
244+00 W
236+00 W
228+00 W
220+00 W
212+00 W
204+00 W
SCALE
1" = 400'
N
LEGEND
o - Soil
55+ ppm
41-54 ppm
0-40 ppm
O - Silt
35+ ppm
30-34 ppm
0-29 ppm
Δ - Rock
70+ ppm
0-69 ppm
Claim Posts, as located on gov.'t claim map
Claim Posts, as located in the field
Grid Lines
WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
MABEL 1-48 &
EVA 40-47 CLAIMS
COPPER GEOCHEMISTRY
Scale: 1 INCH = 400 FT.
Date: JUNE 1975
N.T.S. 105K5
Revised:
By: F. FOSTER
Plate 2

ANVIL CREEK
JOE BASE LINE #4
JOE BASE LINE #5
JOE BASE LINE #2
CROWN 45 TIE LINE
CROWN BASE LINE
ROSE CREEK
CAMP
N
SCALE
1" = 400'
4800 N
4400 N
4000 N
3600 N
3200 N
2800 N
2400 N
2000 N
1600 N
1200 N
800 N
400 N
BASE LINE
400 S
800 S
1200 S
1600 S
2000 S
2400 S
2800 S
3200 S
3600 S
4000 S
4400 S
4800 S
5200 S
332+00 W
324+00 W
316+00 W
308+00 W
300+00 W
292+00 W
284+00 W
276+00 W
268+00 W
260+00 W
252+00 W
244+00 W
236+00 W
228+00 W
220+00 W
212+00 W
204+00 W
LEGEND
o - SOIL
O - SILT
Δ - ROCK
50+ ppm
38-49 ppm
0-37 ppm
34+ ppm
26-33 ppm
0-25 ppm
30+ ppm
0-29 ppm
Claim Posts, as located on gov.'t claim map
Claim Posts, as located in the field
Grid Lines
WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
MABEL 1 - 48 &
EVA 40 - 47 CLAIMS
LEAD GEOCHEMISTRY
Scale: 1 INCH = 400 FT.
Date: JUNE 1975
N.T.S. 105K5
Revised:
By: F. FOSTER
Plate 3


WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
MABEL 1 - 48 &
EVA 40 - 47 CLAIMS
ZINC GEOCHEMISTRY
Scale: 1 INCH = 400 FT.
Date: JUNE 1975
N.T.S. 105K5
Revised:
By: F. FOSTER
Plate 4
LEGEND
O - SOIL
100+ ppm
90-99 ppm
0-89 ppm
O - SILT
110+ ppm
0-109 ppm
Δ - ROCK
80+ ppm
0-79 ppm
Claim Posts, as located on gov.'t claim map
Claim Posts, as located in the field
Grid Lines
SCALE
1" = 400'
N
JOE BASE LINE #1
JOE BASE LINE #5
JOE BASE LINE #2
CROWN 45 TIE LINE
CROWN BASE LINE
BASE LINE
ANVIL CREEK
ROSE CREEK
CAMP
W.P.
332+00 W
324+00 W
316+00 W
308+00 W
300+00 W
292+00 W
284+00 W
276+00 W
268+00 W
260+00 W
252+00 W
244+00 W
236+00 W
228+00 W
220+00 W
212+00 W
204+00 W
4800 N
4400 N
4000 N
3600 N
3200 N
2800 N
2400 N
2000 N
1600 N
1200 N
800 N
400 N
400 S
800 S
1200 S
1600 S
2000 S
2400 S
2800 S
3200 S
3600 S
4000 S
4400 S
4800 S
5200 S

ANVIL CREEK
JOE BASE LINE
JOE BASE LINE 75
JOE BASE LINE #2
CROWN 45 TIE LINE
CROWN BASE LINE
ROSE CREEK
CAMP
BASE LINE
332+00 W
300+00 W
292+00 W
268+00 W
260+00 W
252+00 W
244+00 W
236+00 W
228+00 W
220+00 W
212+00 W
204+00 W
4800 N
4400 N
4000 N
3600 N
3200 N
2800 N
2400 N
2000 N
1600 N
1200 N
800 N
400 N
400 S
800 S
1200 S
1600 S
2000 S
2400 S
2800 S
3200 S
3600 S
4000 S
4400 S
4800 S
5200 S
SURVEY BY NEW FAR NORTH
JOE CLAIMS
INSTRUMENT: SHARPE MF-1 FLUXGATE
SCALE
1" = 400'
N
WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
MABEL 1-48 & EVA 40-47 CLAIMS
MAGNETOMETER SURVEY
GAMMA VALUES - PROFILED
INSTRUMENT: SHARPE MF-1 FLUXGATE
Scale: 1 INCH = 400 FT.
Date: JUNE 1975
N.T.S. 105K5
Revised:
By: F. FOSTER
Plate 5

JOE BASE LINE
CROWN 45 TIE LINE
CROWN BASE LINE
ROSE CREEK
BASE LINE
SURVEY BY NEW FAR NORTH
JOE CLAIMS
INSTRUMENT: SHARPE MF-1 FLUXGATE
SCALE
WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
Mabel 1-48 & Eva 40-47 Claims
MAGNETOMETER SURVEY
Gamma Values - Contoured
Instrument: Sharpe MF-1 Fluxgate
Scale 1 INCH = 400 FT
Date JUNE 1975
NTS 105K5
Revised:
By F FOSTER
Plate 6

LEGEND

☐	Claim Post, as located on gov't claim map
■	Claim Post, - as located in the field
———	Grid Line

Main Grid Coil Spacing = 200 Ft.

Southern Grid Coil Spacing = 300 Ft.

WELCOME NORTH MINES LTD.

VANGORDA 1975 PROJECT

MABEL 1-48 & EVA 40-47 CLAIMS

CRONE ELECTROMAGNETIC SURVEY
DIP ANGLES - PROFILED
HORIZONTAL SHOOTBACK METHOD
FREQUENCY = 1830 Hz.

Scale 1 INCH = 400 FT	Date JUNE 1975	NTS 105K5
Revised	By F. FOSTER	Plate 7


WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
MABEL 1-48 & EVA 40-47 CLAIMS
CRONE ELECTROMAGNETIC SURVEY
DIP ANGLES - CONTOURED
HORIZONTAL SHOOTBACK METHOD
COIL SPACING = 200 FT. ; FREQUENCY = 1830 Hz.
Scale: 1 INCH = 400 FT.
Date JUNE 1975
N.T.S. 105K5
Revised:
By: F. FOSTER
Plate 8
SCALE
JOE BASE LINE #4
JOE BASE LINE #5
JOE BASE LINE #2
CROWN 45 TIE LINE
CROWN BASE LINE
ROSE CREEK
4800 N
4400 N
4000 N
3600 N
3200 N
2800 N
2400 N
2000 N
1600 N
1200 N
800 N
400 N
BASE LINE
400 S
800 S
1200 S
1600 S
2000 S
2400 S
2800 S
3200 S
3600 S
4000 S
4400 S
4800 S
5200 S

LEGEND

Claim posts, as located on gov't claim map

Claim posts, as located in the field

Grid lines

Values in Milligals

WELCOME NORTH MINES LTD.

VANGORDA 1975 PROJECT

Mabel 1-48 & Eva 40-47 Claims

RESIDUAL GRAVITY PROFILES

For Hecla Mining Company

By Overland Explorations Ltd.

Scale 1 INCH = 400 FT	Date JUNE 1975	N.T.S. 105K5
Revised	By F FOSTER	Plate 9

WELCOME NORTH MINES LTD.

VANGORDA 1975 PROJECT

Mabel 1-48 & Eva 40-47 Claims

RESIDUAL GRAVITY MAP

For Hecla Mining Company

By Overland Explorations Ltd.

Scale 1 INCH = 400 FT	Date JUNE 1975	NTS 105K5
Revised	By F FOSTER	Plate 10

LEGEND
MESOZOIC
PALEOZOIC
Cretaceous or Tertiary
13 Saussuritized porphyritic hornblende diorite
Age Unknown
12b Hornblende diorite, gabbro
12a Pyroxenite, sometimes cataclastic and serpentinized
Cretaceous
11 Porphyritic biotite-quartz monzonite and granodiorite; muscovite-biotite granodiorite; foliated equivalents
Ordovician and Silurian
3d Rhyolitic quartz-feldspar porphyry
3c Medium-green foliated actinolite schist, andesitic greenstone, minor pale green crystalline limestone
3a Dark grey biotite-chlorite schist and phyllite
Cambrian and Ordovician
2b Foliated amphibolite; pale green chloritic phyllite; andesitic greenstone; chlorite schist
2a Calc-silicate schist, gneiss and phyllite, can contain 2b
Cambrian
1d Pale green chloritic schist and phyllite; greenstone
1c Muscovite-biotite schist; muscovite-andalusite-biotite schist ± garnet and staurolite
Geological boundary (defined, approx., gradational, assumed)
Limit of geological mapping
First foliation (S1)
Second foliation (S2)
Third foliation (S3)
Lineation
Minor fold axis related to S2
Joints (inclined, vertical)
Fault (defined, approximate, assumed)
Anticline (approx., assumed) Arrow indicates direction of plunge
Syncline (approx., assumed) Arrow indicates direction of plunge
Anticline, Syncline overturned
Outcrop
Subcrop
N
WELCOME NORTH MINES LTD
VANGORDA 1975 PROJECT
Mabel 1-49 & Eva 40-47 Claims
GEOLOGY
Scale 1 INCH = 400 FT
JUNE 1975
FOSTER

WELCOME NORTH MINES LTD.
VANGORDA 1975 PROJECT
MABEL 1-48 & EVA 40-47 CLAIMS
COMPILATION MAP
Scale: 1 INCH = 400 FT
Date: JUNE 1975
NTS 105K5
Revised
By: F FOSTER
Plate 12
LEGEND
Claim posts, as located on gov't claim map
Claim posts as located in the field
Grid lines
Residual Gravity Anomaly (milligals)
CEM Conductor with Axis
Magnetic Anomaly
- Soil Cu = 41+ Pb = 38+ Zn = 90+ ppm
- Silt Cu = 30+ Pb = 26+ Zn = 110+ ppm
- Rock Cu = 70+ Pb = 29+ ppm
- Proposed Diamond Drill Target
SCALE
JOE BASE LINE
CROWN 45 BASE
CROWN BASE LINE
BASE LINE
ANVIL CREEK
ROSE CREEK
N
4800 N
4400 N
4000 N
3600 N
3200 N
2800 N
2400 N
2000 N
1600 N
1200 N
800 N
400 N
400 S
800 S
1200 S
1600 S
2000 S
2400 S
2800 S
3200 S
3600 S
4000 S
4400 S
4800 S
5200 S