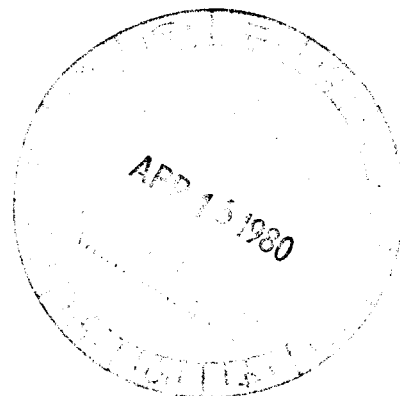
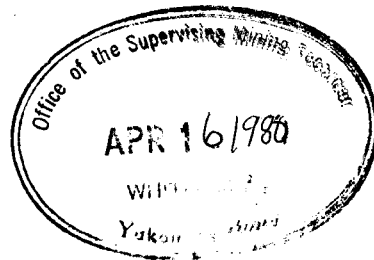


ANACONDA CANADA EXPLORATION LTD.

ASSESSMENT WORK REPORT  
ON THE  
GEOLOGY, GEOCHEMISTRY AND GEOPHYSICS  
OF THE  
STYX 1-160 CLAIM GROUP  
GERMAN CREEK AREA  
NTS 116 B/6  
64°20' N; 139° 15' W  
DAWSON MINING DISTRICT  
MAY 26 TO JULY 27, 1979



by

Charles Roots  
Kim Baldry  
Gerald G. Carlson

**MICROFILMED**  
DATE \_\_\_\_\_

March 31, 1980

090551

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representing work to the amount of

\$ 96,000.00

*J. A. Morin*  
MICROFILMED

Considered as ~~representing~~ work under Section 53 of the Quartz Mining Act.

*[Signature]*  
B. R. BAXTER  
Supervising Mining Recorder  
*[Signature]*  
Commissioner of Yukon Territory

## TABLE OF CONTENTS

	<u>PAGE</u>
CONCLUSIONS	1
RECOMMENDATIONS	3
INTRODUCTION	4
LIST OF CLAIMS	6
REFERENCES CITED	6
METHODS	8
PHYSIOGRAPHY	10
VEGETATION	13
GEOLOGY	15
A:    Methods	15
B:    Stratigraphy & Structure	15
C:    Lithologic Descriptions	19
Volcanic Flows	19
Maroon Weathering Shales	21
Crystal Tuff	21
Lithic Tuff	23
Pyroclastic Breccia	23
Lahar	24
Black Shale	25
Cherty Shale	25
D:    Alteration and Mineralization	27
GEOCHEMISTRY	29
GEOPHYSICS	37
DESCRIPTION OF ANOMALIES	39
LC- Central Zone	40
LC- North Zone	40
SR Zone	43
Vulcan Ridge Trend	44
Northwestern Anomalies	46

### APPENDICES

1. Statement of Qualifications - Gerald G. Carlson
2. List of employees
3. Statement of expenses

## LIST OF PLANS

STYX and SCYLLA Claim Groups

German Creek Geology

Geochemistry - Copper

Geochemistry - Lead

Geochemistry - Zinc

Geochemistry - Silver

Surveyed Baselines - Underhill & Underhill

Max-Min Survey Results - Geoterrex

## LIST OF FIGURES

<u>Figure Number</u>		<u>Page</u>
1	STYX topography, line grid and claim outline	7
2	Log-probability plot for Cu	31
3	Log-probability plot for Pb	32
4	Log-probability plot for Zn	33
5	Log-probability plot for Ag	34
6	Geochemical profile with Hg, L4E	41
7	Geochemical profile with Hg, German Creek traverse	42
8	Geochemical profiles with Hg, SR zone	45

## CONCLUSIONS

A program of line cutting, geological mapping, geochemical sampling and geophysics was conducted on the STYX 1-160 claim group during June and July, 1979. The claims, staked during April, 1979, are located 35 km. due north of Dawson City. After the baseline was cut and surveyed by Underhill and Underhill in late May, a crew from Jean Alix Co. Ltd. completed 79.5 km. of linecutting.

Using this line grid, geological mapping and soil sampling were conducted over an area of approximately 1680 ha. The geological work defined a sequence of volcanic rocks ranging from calcite-rich vesicular basalt flows and breccias to siliceous pyroclastics and related breccias and volcani-clastic sediments. Interbedded with these is a sequence of shales and cherty argillites. The entire section, which may be upper Proterozoic or lower Paleozoic in age, is moderately to tightly folded on an east-west axis. The strongest geochemical and geophysical anomalies correlate with the contact between felsic volcanic rocks and overlying pelitic sediments.

Geophysical surveys included magnetometer, run by Anaconda personnel, and 26.5 km. of contract EM work by Geoterrex. The EM was a Max-Min survey, utilizing a 200 m. coil separation. The more prominent anomalies were checked using all five frequencies and a 100 m. coil separation.

Two principal anomaly zones have been defined by the 1979 field program; the LC zone and the SR zone. Detailed follow-up on the LC zone provided improved geological, geochemical and geophysical definition. At the end of the field

season, surveying and fill-in linecutting were conducted in these areas to provide control for detailed surveys to be completed during the 1980 field season.

The 1979 surveys provided strong evidence for the existence of significant massive Cu-Pb-Zn-Ag sulfide mineralization within the STYX claim group. However, the anomalies defined are rather broad, and it is felt that more detailed anomaly definition is required in order to develop diamond drill targets.

## RECOMMENDATIONS

Work should be continued on the German Creek property during 1980 in two stages, including:

1. A winter program of lab oriented studies would involve the study of thin sections of selected samples from the 1979 mapping program and additional geochemical studies on soil samples collected over the presently defined LC and SR anomaly zones.
2. Field work, to be conducted in early June, will include geological mapping and fill-in geochemical sampling by Anaconda personnel and contract geophysicists. This work will be centered on the LC and SR zones, utilizing the recently completed detailed linecutting grids. Geophysical surveys will include further Max-Min work to provide 100 m. line spacing in these zones. The work will be conducted from the Antimony Mountain base camp, with daily transport to and from German Creek utilizing a contract helicopter.

## INTRODUCTION

German Creek, 35 km. due north of Dawson City, flows south as a major tributary of the Chandindu River. It drains a 125 sq. km. area of the southern Ogilvie Mountains, bordering the north side of the Tintina Trench.

The area was isolated by two silt samples of the G.S.C. Uranium Reconnaissance Program which were moderately anomalous in Cu and Zn as well as Ni, Mo and Ba. A traverse by Carlson during the 1978 reconnaissance program noted a succession of amygdaloidal flows and breccias as well as siliceous crystal and lithic tuffs interbedded with shales of Unit 3 and possibly Unit 9.

A reconnaissance camp, which involved the entire 1978 crew, was located in the German Creek area late in the field season. The results of this brief geological and silt and soil sampling program as reported in the Final Report for the 1978 Yukon Project, indicated a geological environment favorable for a volcanogenic massive sulfide deposit with a coincident soil and silt geochemical anomaly.

On the basis of this study, further work was recommended. This work has included the staking of the 160 claim STYX Group and the 32 claim SCYLLA Group during the early Spring of 1979 (see Map in Pocket). From the base camp, located on the Chandindu River, approximately 8 km. from the center of the claim group, a surface exploration program consisting of a surveyed baseline, linecut cross lines,

geological mapping, soil sampling and EM and magnetometer surveys was conducted. Camp was supplied and field work supported using a contract Bell 47 helicopter from Trans North Turbo Air Ltd. Figure 1 shows the line grid and major topographic features relative to the claim outline.

Surveying was commenced on May 26th, and cutting of the line-grid was completed between June 1 and June 30. Surface exploration work, including geological mapping, soil sampling and magnetometer survey, was commenced on June 7 and completed on July 26. The contract Max-Min EM survey, conducted by Geoterrex, was commenced on June 25 and completed July 27.

This report provides a description of the work conducted during this program, as well as a preliminary assessment of the data as it has been compiled to date.

## LIST OF CLAIMS

The following claims were recorded at the Dawson Mining Recorder's office in the names of the individual stakers. Since that time, one hundred percent interest in all claims has been transferred to Anaconda Canada Exploration Ltd.:

<u>Claim</u>	<u>Grant No.</u>	<u>Anniversary Date</u>
STYX 1-160 (incl.)	YA32067-YA32226 (incl.)	April 18, 1980
SCYLLA 1-32 (incl.)	YA32283-YA32314 (incl.)	April 24, 1980

## REFERENCES CITED

Green, L. H., 1972, Nash Creek, Larsen Creek and Dawson Map areas, Yukon Territory: G.S.C. Memoir 364. 157 p.

Vernon, P., and Hughes, O.L., 1966, Surficial Geology, Dawson, Larsen Creek and Nash Creek Map areas, Yukon Territory: G.S.C. Bull. 136.

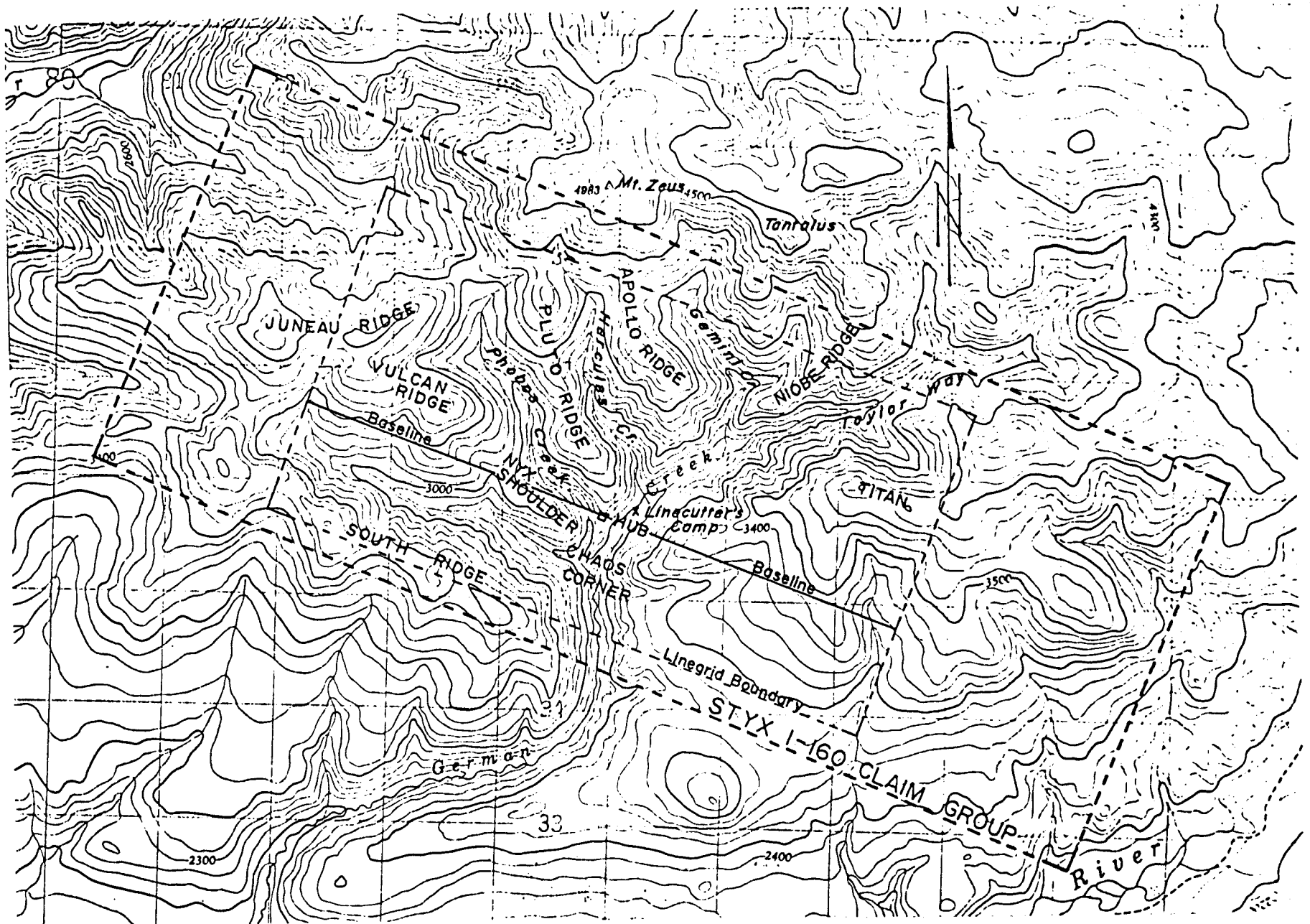


Figure 2. Topography, geographic names, outline of grid area and outline of STYX 1-160 claim group, German Creek.

## METHODS

The baseline survey included the cutting of a minimum 1 m. wide line, parallel to the regional strike (Az 110°), for a distance of 5.6 km. Stations were marked every 200 m. and lines turned off at each station. The contract surveyors, Underhill and Underhill, have provided a plan of this work. (see Pocket).

The linecutting was contracted by Jean Alix of Val d'Or and was carried out, using axe and machete, by a four-man crew. Lines were cut at right angles to the baseline at each of the 200 m. stations on the baseline, and alternated 2 km. and 3 km. in length. The lines were picketed at 25 m. intervals by slope chaining. In addition, six 1 km. long fill-in lines were cut in the center of the grid. Some of the lines, particularly in the northeastern part of the grid, could not be completed due to steep topography. A total of 79.5 km. of lines was cut by this crew on the STYX Claim Group. A further 30.5 km. of fill-in lines were cut in September and October by Eastern Associates Reg'd.

Geological, geochemical and geophysical surveys were conducted from a base camp established on the Chandindu River, due east of the claim group. The camp was set up during the period June 1 to 6, and the field work was commenced on June 7. Most of the geology was mapped by Roots and Baldry, with some assistance from the reconnaissance geologists, Gemmell and Kavanagh, and Carlson. The soil sampling and magnetometer survey were conducted by Magee and Sanger, with a brief soil sampling blitz by all field personnel. During

the period June 7 to July 26, a total of 37 field days were worked. This has included 66 geologist days, 97 soil sampler days and 6 magnetometer days. Three and a half days were lost to poor flying conditions and, every second weekend, two days off were spent in Dawson City. A number of days were spent in base camp plotting maps and profiles, writing reports and studying rock samples.

The Max-Min survey was conducted by a crew contracted from Geoterrex during the period June 25 to July 27. The crew consisted of two operators, assisted by Bob Keith of Geoterrex for the first two days of the survey. The operators secant-chained each of the lines prior to surveying, and used a 200 m. coil spacing on 400 m. spaced lines for the initial survey. Follow-up work on the most interesting conductors involved short survey lines and 100 m. coil spacing.

## PHYSIOGRAPHY

This region of the southern Ogilvie Mountains is characterized by rounded ridges and broad shoulders between deep creek valleys with narrow floors. Elevation varies from just under 600 m., where German Creek enters the wide Chandindu River Valley, to nearly 1500 m. Due to the deeply dissected terrain and thick vegetation cover over most areas, movement on foot is difficult, and exploration work is facilitated by helicopter support. Except for some steep cliffs in upper German Creek Valley, traversing by foot was possible over the entire claim group. Rock exposure is poor over most of the grid, and almost non-existent on many slopes where moss is thick and underlain by permafrost.

The line grid covers an area of 16.8 km.<sup>2</sup>, with long axis in an east-west direction over the middle-upper section of German Creek. The western part of the grid features broad ridge backs with steep slopes leading to small creeks in narrow valleys which are choked with alder and willow thickets. The main valley of German Creek is unique in the study area because of a level bench, 50 to 100 m. wide along the western margin. This area provides the only lowland camp sites on the property. Outcrops west of German Creek are distributed on ridge crests, steep slopes and creek banks, with abundant talus slopes. Wide saddles in three sub-parallel ridges are underlain by shale, as are the general trends of the intervening valleys. Topography is enhanced by a resistant crystal tuff unit, which forms many of the ridge

crests.

On the east side of German Creek is a steep, uniform slope rising to an undulating plateau 300 m. above the valley. The crystal tuff unit is exposed as narrow spires upon this scarp, and probably underlies some of the broad humps on the plateau. This upland is a broad muskeg of almost 4 km.<sup>2</sup> gently sloping to the south, and cut by two alder - choked valleys, one of which drains into German Creek. The steeper banks of these valleys provide the only rock exposure in this area.

The northern limit of this muskeg plateau is better drained and gives way to buckbrush, culminating in high, rounded ridge crests which surround the headwaters of German Creek. Acid and andesitic flow rocks are exposed in limited outcrop and widespread talus at the heads of valleys, rising steeply to the highest ground in the study area, in the north and northeast.

Landforms in the German Creek area illustrate a fairly mature stage of weathering and erosion. However, the uniform height of ridges and shoulders strongly suggests a paleo-peneplain, sloping southwards. The only glacial erratics observed were located at the southeastern limit of the grid area. Traces of lateral moraines and meltwater channels are noted by Vernon and Hughes (1966) on the high land near the mouth of German Creek. It is possible that the entire area lay beneath the southern limits of glaciation. The poor drainage in the southeastern portion may perhaps be explained by glacial scouring, with a high clay content

till layer.

Talus debris on the steeper slopes is believed to be locally derived and has been used to define topographic upper limits of lithologies and to indicate the continuity of thin members through areas of poor bedrock exposure.

## VEGETATION

A near complete range of sub-arctic faunal zones is found within the 600 m. of elevation change in the German Creek area. Orientation of slope is the most striking control of vegetation. North facing slopes are usually underlain by permafrost and covered with small spruce, with an excessive build-up of moss and lichen growth. South facing slopes, with much greater weathering action, have better developed and often well drained soils which support large trees and continuous forest.

Elevation is the next most prominent control. Valleys will support large spruce and poplar to 600 m. elevation. Mixed forest of spruce and immature birch and poplar is common on most south and some east facing slopes to over 1000 m. Large spruce and thick buckbrush continue to 1200 m., but by 1400 m. spruce are scattered and stunted and the buckbrush is smaller. Above this, clumps of saxifrage, grasses and campion are sparse upon the loose rock.

Matted and tangled alder-willow thickets are a very accurate indicator of wet slopes. The bright green foliage is seen along the creek beds and in gullies and hollows. The vegetation seems to thrive where water is continuously running among the root systems and forms a rapidly accumulating mat of dead organic matter.

Damp areas without drainage are underlain by permafrost, supporting muskeg vegetation consisting of heavy moss and scrub spruce. The German Creek bench and the gently sloping

downs at the east end of the area are of this category. Often, the only soil observed in these areas is typical A<sub>o</sub> horizon, consisting of decaying organic matter.

The driest areas are characterized by small poplar trees and large amounts of yellow caribou lichen. Most of these slopes face east, or south at higher elevations. Here, the thin soil cover reveals considerable talus.

Rock type also has some controls over vegetation. Black shale, the most common underlying rock, appears to facilitate drainage. The crystal tuff produces extensive talus slopes of coarse, angular boulders that are not readily weathered. Vegetation is usually sparse on these slopes.

In contrast, volcanic flow members, mainly andesitic, support maximum vegetation. This may be due to finer breaking and more extensive weathering of the carbonate-rich amygaloidal flows and breccias.

## GEOLOGY

### A: Methods

The geology of the claim group was mapped at a scale of 1:5000 ( 1 cm = 50 m.), using the 200 m. spaced cut lines for survey control. The mapping followed two procedures: Principally, all lines were traversed, noting lithology as well as variations in topography and vegetation. Secondly, all known outcrop occurrences were mapped, usually by following ridges or valley bottoms, and tied into the line grid. As results from the geochemical and geophysical surveys were received, follow-up mapping was conducted in the vicinity of anomalies. In one case, near the linecutter's camp on German Creek, 1:1000 scale mapping was done in the anomaly area along the creek bed.

All geological data was plotted in the field on 8½ x 11 inch mylar grid overlays. Due to the scarcity of outcrop, much geological information was gleaned from scree slopes, soil sample pits and upturned tree boles. Most outcrop exposures were sampled and hand specimens, back at camp, were cut and examined with a binocular microscope.

### B: Stratigraphy and Structure

Interpretation of stratigraphy and structure is difficult due to the scarcity of bedrock exposure. The following interpretation is based largely on the relative spatial distribution of known lithologies; in particular the crystal

tuff exposed on the east slopes above German Creek, and from attitudes of bedding and minor folds in black shales along stream beds.

There is only tenuous and conflicting evidence for the direction of stratigraphic tops within the claim group; development of a stratigraphic section at German Creek depends on regional interpretations.

Regionally, Unit 3 (Green, 1972) to the north is overlain by a lens of volcanics (Unit 4; Green, 1972) and, as interpreted from this study, the Road River Formation in the extreme south. The principal assemblage of Unit 3 at this location is maroon shale. Basalt flows and related basic intrusives interfinger and cut the topmost shale sequence, with a gradual transition to massive basalt and andesite flows and breccias. This is the typical Unit 4 succession and it extends into the northernmost portion of the STYX Claim Group. The succeeding sequence, consisting of interbedded basalt and andesite flows and breccias, dacite and rhyolite pyroclastics and grey to black, often very siliceous, shales and argillites, is apparently unique to the German Creek area. The geochemical anomaly, in the uppermost part of this sequence, is evidence of the volcanogenic massive sulfide potential adjacent to the rhyolitic crystall tuff unit.

Black chert, quartzite, chert breccia and conglomerate were seen on the high ridge to the south on the western part of

the grid (South Ridge) and were not observed elsewhere to the north. The chert pebble conglomerate strongly resembles a horizon near Mt. Jeckell, 20 km. east, known to be near the base of the Road River Formation. The South Ridge units dip moderately eastward, and there is no evidence to suggest they have been strongly deformed. It is logical to conclude these rocks overlie the German Creek volcanic assemblage: The contact may be unconformable.

Most lithologies trend  $110^{\circ}$  across the study area. Repetition of rock types, the apparent discontinuity of some members and the outcrop pattern on the southeast of German Creek suggests tight, isoclinal folding with plunges to the west and amplitudes on the range of 1000 m. Shaley members involved in the folding show disrupted bedding, dragfolding on a 1 m. scale, chevron-type crenulations with a 5 to 10 cm. amplitude and in at least one location, a synclinal structure of 25 m. width. No axial plane cleavage was observed in the shales or argillites. However, at the apex of the crystal tuff exposure there is much shearing as well as slickensides and mylonite. Additionally, there appears to be local open, gently plunging cross folding on a north-south axis. Moderate fold plunges are observed both to the east and to the west in the black shales. The trace of an EM conductor located near the crest of the anticlinal crystal tuff, between Line 3 and 6 E at 400 to 500 N, shows an increase in depth to the top of the conductor towards the west.

Two west-trending ridges, Pluto and Vulcan, feature considerable crystal tuff talus upon their north-facing slopes;

more than would be expected from the solitary outcrops on the ridge crests. Laharic breccias flank both sides of these ridges. It is interpreted that the ridges are culminations of tight folds of crystal tuff and lahar. Black shale between these anticlinal crests underlies the deep valleys and may be considerably disrupted, as evidenced by the variation in cleavage attitudes.

North of the folded tuffs and shales is a thick succession of andesitic to basaltic flows, some acidic flows and related pyroclastics. The most southerly of these flow units is a well defined band, 50 to 100 m. thick, forming calcite stained cliffs and distinctive grey weathering mitre-shaped cliffs to the west. Pillow structures are evident at most locations; a banded chert horizon and intercalated maroon shale and andesite breccia, probably broken from flow fronts, have been observed. Pillows indicate tops to the northeast, suggesting either that the section is reversed or, as interpreted here, that the pillow exposures are on the southwest limb of a major syncline.

This structural pattern would be the result of thrusting from the southwest. Massive, homogeneous units, such as underlying flows and overlying quartzites, would have undergone simple tilting to the southwest, whereas the intervening succession of relatively thin, competent volcanic units and interlayered shales and argillites, possibly with inclined massive sulfide lenses, would have provided the locus for intensive deformation. (see Figure 6.)

C: Lithologic Descriptions

The following section provides a brief, mainly macroscopic description of each of the rock units distinguished in the 1979 mapping program. Descriptions are in approximate order of decreasing age, as presently interpreted. Maroon and green shales of Unit 3 were not encountered in the mapping. Refer to the 1978 report for a description of these rocks.

Volcanic Flows

This unit shows variations from massive to amygdaloidal and from basic to acidic. Outcrops tend to be prominent, especially to the north of German Creek, where the unit forms cliffs up to 15 m. high. South of the baseline, the unit is less exposed and is seen mainly in small outcrops and talus, possibly the result of thinner and less abundant flows here.

The unit weathers to a light or dark brown color, or greenish-purple for basalt, often with a distinctive pock-marked surface due to the dissolution of calcite in amygdules. Classification as basalt, andesite, or dacite, was done in the field on the basis of color index.

There are apparently two main volcanic flow units. The most extensive of these is an amygdaloidal to massive unit in the north and west which outcrops in several bands across the map area and which is related to the main mass of Unit 4 along the north side of the grid. The other is a less extensive amygdaloidal dacite-andesite unit in the southeast grid area which forms some prominent outcrops and cliffs but which is less pronounced on the west side of German Creek.

The northern unit shows facies variations both along strike and up section. In the northwest, the flows are thick, pillowed, amygdaloidal basalts which form moderately steep bluffs and prominent outcrops. The fresh surface is dark gray-green with white to brown calcite amygdules and dark chlorite-rich pillow rims. Amygdules vary in size from 2 to 4 mm., and form 30 to 50 percent of the rock. The larger amygdules may be interconnected, and contain coarsely crystalline calcite. Pyrite occurs in disseminated cubes and also along fractures. The pillows are fairly well formed and up to 40 cm. across. Bands of chert interstitial to the pillows were observed locally. Along strike to the east, in the north central section of the grid, similar basalts were observed, but in a thinner band.

Both to the east and to the south, the units are more siliceous. Overlying the basalts, in the southwest and central part of the grid, the flows are predominantly amygdaloidal andesites. The lower flows form prominent spines on the ridges and mitre-shaped bluffs on the slopes while the upper flows are narrower, with less pronounced outcrop expression.

The andesites are fine-grained, dark to medium grey-green with white calcite-filled amygdules and dark grey quartz-filled amygdules, which together form between 5 and 65 percent of the rock and are irregularly distributed. Local non-amygdaloidal flows, or possibly dykes, were also observed.

Pillows were rarely identified, and were observed to be less well developed than those in basalt. Thin sections from the 1978 work showed some of this unit to be altered basalt.

The narrow southern flow band is a fine-grained, dark to greenish grey rock with white to orange calcareous amygdules and dark grey quartz amygdules, which vary from 1 to 10 mm. in size and comprise up to 80 percent of the rock. A dark colored phenocryst, probably plagioclase, was observed in some samples.

#### Maroon Weathering Shales

This is a rare rock type in the grid area. Although it is similar to extensive exposures of Unit 3 north of the grid, within the survey area it is restricted to narrow inter-flow bands. Most extensive exposures are in the northeast, on Niobe Ridge.

#### Crystal Tuff

This unit tends to form prominent spines trending approximately  $110^{\circ}$ , with thickness between 10 and 30 m., and also produces extensive talus slopes. It weathers a light grey color, sometimes with rust stains in patches and along fractures. Weathering may either obscure or accentuate the outline of feldspars.

The matrix is fine-grained and may be light grey, greenish-grey (possibly due to chloritic alteration) or dark grey. It often contains minute limonitic or hematitic specks, and, frequently, disseminated pyrite. While the pyrite content

is usually less than 1 percent, it was locally observed to exceed 5 to 10 percent. The rock is mainly non-calcareous.

The most abundant phenocryst is feldspar, occurring as predominantly unbroken and euhedral crystals, occasionally intergrown and varying in size from 2 mm. to 15 mm., averaging 5 mm. They comprise 5 to 50 percent of the rock. Thin section work on samples collected in 1978 showed the presence of both plagioclase (andesine) and orthoclase, often very highly altered.

Quartz crystals, making up one to 10 percent of the rock, are always dark grey, rounded, and range in size from .5 mm. to 2 mm. In thin section, they frequently appear as resorbed grains.

The 1978 thin section examinations showed the rock to be intensively altered, with pervasive sericitization, saussuritization and silicification of both feldspars and groundmass. Pyrite is present as disseminated grains and is usually in the 1 to 3 percent range, but locally greater than 10 percent was observed.

The thickness of this unit has been difficult to explain. Actual outcrop on ridge tops is narrow, although extensive talus slopes have developed on either side. The crystal tuff units lie within a succession of black shale. Contact zones are often marked by the occurrence of lithic tuff, pyroclastic breccia and laharic deposits.

### Lithic Tuff

This unit is mainly found in talus or in small, rounded outcrops, usually closely associated with the crystal tuff unit. It weathers a medium brown-grey, and is often difficult to distinguish from the crystal tuff.

The matrix is fine-grained and is probably similar to that of the crystal tuff. Fragments are typically angular and poorly sorted, varying in size, from 1 mm. to 5 cm. The fragments are predominantly crystal tuff. Broken feldspar crystals are sometimes observed, forming a crystal-lithic tuff. The proportion of matrix to fragments varies from 20 to 60 percent.

This unit, though very poorly exposed, appears to form discontinuous lenses, possibly overlying the crystal tuff and representing the latest, most explosive stages of volcanic activity.

### Pyroclastic Breccia

This unit is observed as prominent knobs and cliffs and large talus blocks in the south, on Nyx Shoulder, and in the northwest, on Tantalus Ridge. The rock weathers orange to beige-brown, with clasts being highlighted by the dissolution of calcareous matrix material.

The matrix is fine-grained and tuffaceous, forming 10 to 30 percent of the rock. It contains minute specks of pyrite, mainly less than one percent, and in part may consist

of pink-white crystalline calcite.

The fragments consist of poorly sorted, angular to sub-rounded clasts consisting mainly of volcanic flow rocks. Size ranges from 1 mm. to several meters, averaging 0.3 to 5 cm. Aside from amygdaloidal andesite, fragments of pumice, chert, argillite and quartz were observed. Several thin bands of pyrite were noted in one fragment of black shale in the vicinity of the Nyx Shoulder.

This is a proximal unit related mainly to the tops and flanks of flows. It probably grades laterally, or more distally, to the lahar unit described below.

#### Lahar

This unit is found particularly in the southwestern part of the grid, on Nyx Shoulder. It is dominated by matrix material, usually comprising over 50 percent of the rock, and consisting of dark grey to black slightly calcareous argillaceous material.

Clasts are usually rounded, ranging from 0.5 to 50 cm., and may consist of massive andesite, argillite, chert, quartz and limestone fragments and quartz and feldspar crystals.

This is the most re-worked of the volcanic units; actually a very immature sediment. It may mark the transition between active volcanic eruptions and a quiet sedimentary deposition and, as such, could be an important marker of horizons favorable for massive sulfide accumulation.

### Black Shale

This unit occurs in several bands across the grid area, trending at  $110^{\circ}$ . These commonly form creek valleys or saddles on ridge tops. The unit is usually poorly exposed, being readily weathered and covered by more resistant volcanic talus or vegetation. On some ridges, the black shale produces steep, loose, unvegetated talus slopes which are rock slide prone. It most commonly weathers brown to black or a characteristic powdery silver-grey.

It is a very fine-grained argillaceous rock which sometimes has the appearance of silty mudstone or siltstone. In some cases, it has been identified as a black chert in the field. Locally, hairline fractures of quartz and calcite are abundant. Laminations are observed within the unit, and vary from a few mm. in the north to 1 cm. in the south.

This unit is structurally complex, having taken up much of the movement between more competent volcanic units during folding and tilting. The lahar appears to represent a transitional rock between volcanic and sedimentary depositions, while the shale itself was probably deposited in a quiet, euxinic environment between volcanic events.

### Cherty Shale (Road River Formation)

The high South Ridge, west of German Creek, features an assemblage of sedimentary rocks largely unlike those elsewhere in the study area. Outcrop is rare except on steep

slopes and along German Creek. The unit weathers black or, locally, rusty brown.

Chert, siliceous argillite and minor quartzite and conglomerate are found as a thick sequence on the north facing slope, with dips to the south. Individual beds vary from 10 to 50 cm. in thickness, with thin internal banding. No strong marker horizons were encountered. Isolated dark grey siliceous argillite outcrops are observed along the lower part of the north facing slope. Most of the rock is featureless, with bedding obscured by a rough cleavage which may represent tight folding or crenulation.

Two outcrops of conglomerate suggest a 5 to 10 cm. thick bed at or near the top of the chert horizon, near the crest of south ridge. It weathers rusty brown, and consists of predominantly subrounded clasts, up to 2 cm. long, of light colored quartz and chert in a fine-grained, black mudstone matrix. Clasts are fractured, and a mortar texture, with smaller chips of the same composition surrounding larger clasts, suggests a high energy depositional environment.

These rocks do not appear to belong to the Unit 4 volcanic series and are presently thought to be near the base of the Ordovician - Silurian Road River Formation (Unit 9). This unit was mapped by Green, 8 km. to the east near Mt. Jeckell, where a conglomerate outcrop of similar texture and composition to that of South Ridge makes this correlation a virtual certainty.

Contact relations between this unit and underlying shales and volcanics are uncertain. There is a suggestion of gradation from thinly laminated shales through more thickly banded cherty shales and into the more massively bedded sediments of Unit 9. The unit 9 sediments do not show the same degree of deformation as those to the north. This could be attributed to textural and compositional differences between the two units or to a hidden unconformity.

D: Alteration and Mineralization

The intensity of alteration of the volcanic rocks is very difficult to ascertain in hand specimen. Sericitization of the crystal tuff was evident near the line-cutter's camp (LC). Thin section work on samples from the 1978 work showed a high degree of sericitization and veining on a micro scale, along with alteration of feldspars, resorption of quartz grains and some degree of silicification. Thin section work will be continued on samples collected during the present program.

Pyrite is the exclusive sulfide recognised, with the exception of a few specks of chalcopyrite with quartz in amygdaloidal andesite near Mt. Zeus. A spot of malachite was observed in black shale east of German Creek and south of the baseline. Iron oxide weathering stain is common, particularly in the crystal tuff unit.

Pyrite has been noted in all of the units in the German Creek area. It is most common in the shale unit,

which usually contains a minimum of 1 to 2 percent fine-grained, disseminated pyrite and may contain up to 40% on certain planes. Thin pyrite bands, up to 3 mm. in thickness, have been observed.

The volcanic flow units contain usually less than 2 percent pyrite, as disseminated grains, in amygdules with calcite, around the edges of pillows and in fractures.

The crystal and lithic tuff units contain 1 to 2 percent or less pyrite, as disseminated grains, with a few exceptions. Up to 30 percent pyrite with an average of 5 to 10 percent, was noted in a crystal lithic tuff unit in German Creek near the linecutter's camp. Cherty sediments in this same area were also enriched in pyrite containing up to 15 percent in narrow bands. Another area of increased pyrite content in the crystal tuff, averaging 3 to 5 percent, was in the vicinity of 500 to 600 N on L2W.

The laharic and breccia units also contain pyrite. At one location, 100N on L8W, a laharic unit with a black mudstone matrix was noted to contain angular pyrite chips to 2 mm. in diameter. Thinly banded pyrite was also noted in shale fragments within this unit.

## GEOCHEMISTRY

Soil samples were collected over the grid at 25 m. intervals. Samples were collected, wherever possible, from the B or upper C soil horizon. Approximately 200 to 300 gm. of samples were collected in gusseted Kraft paper sample bags, and shipped to Bondar-Clegg in Whitehorse for analysis for Cu, Pb, Zn and Ag. Results of this work have been plotted and are included in the Pocket.

In general, south facing slopes and ridge tops are well drained and provide readily accessible sample material. North facing slopes and depressions are less well drained, often underlain by permafrost and overlain by a thick blanket of moss and decaying organic matter. Soils in these areas are either transported or very immature, particularly on the steeper slopes, where talus is often abundant. Sampling is difficult in these environments, although good sample material is often readily accessible under large boulders, upthrown tree holes or poorly developed frost boils. Where permafrost extended into A horizon soils, no sample could be collected.

Interpretation of the data has been facilitated by plotting log-probability graphs. From these, the 99th, 98th, 95th, 90th and 80th percentile values have been determined for each of the elements, as shown below in Table I:

Element	Percentile				
	99	98	95	90	80
Cu	150	115	76	48	33
Pb	150	105	60	43	27
Zn	650	440	235	150	96
Ag	3.0	2.0	1.3	0.85	0.5

These values have been used in contouring the data on the geochemical plans.

The log-probability plots, Figures 2 to 5, show some characteristics of the various element distributions. The curve for copper shows two separate straight line segments, with a separation at approximately 65 ppm. This may mark a difference in background between shale and volcanic rocks, or, since only 16 percent of the data occurs above this value, it may indeed represent an anomaly threshold.

Lead shows possibly three separate distributions, below 22 ppm, between 22 and 60 ppm, and above 60 ppm. The lower distribution is the most extensive and appears to represent background over both the volcanic flow rocks in the north and sediments in the south. The middle distribution may represent an alteration zone related to the crystal and lithic tuff units, as it is localized more or less in the central part of the grid, while the upper distribution, greater than 60 ppm, probably represents anomalous values.

The graph for zinc is very erratic, with three or possibly even four straight line segments indicated. The two higher distributions, from 65 to 175 ppm and greater than

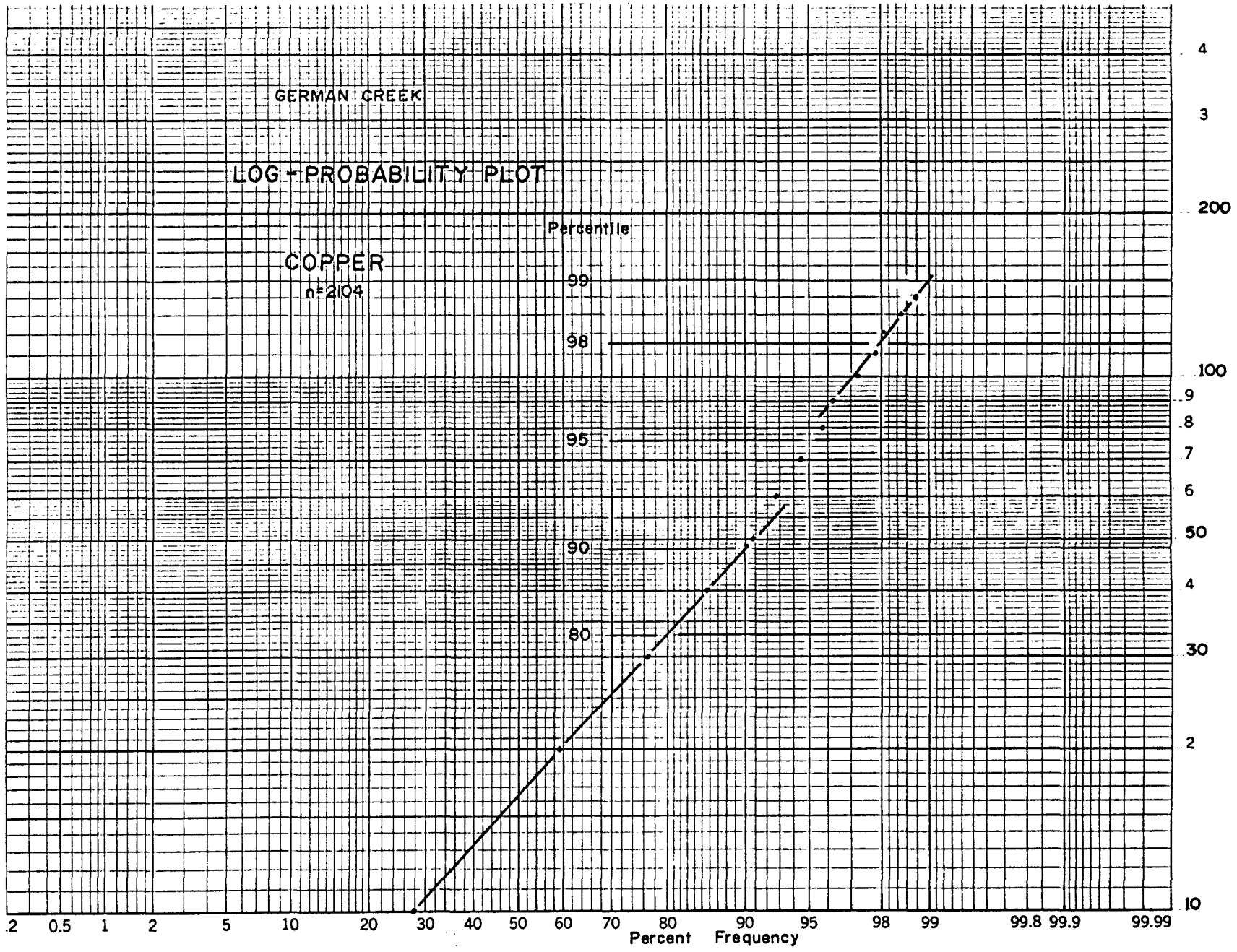


FIGURE 2

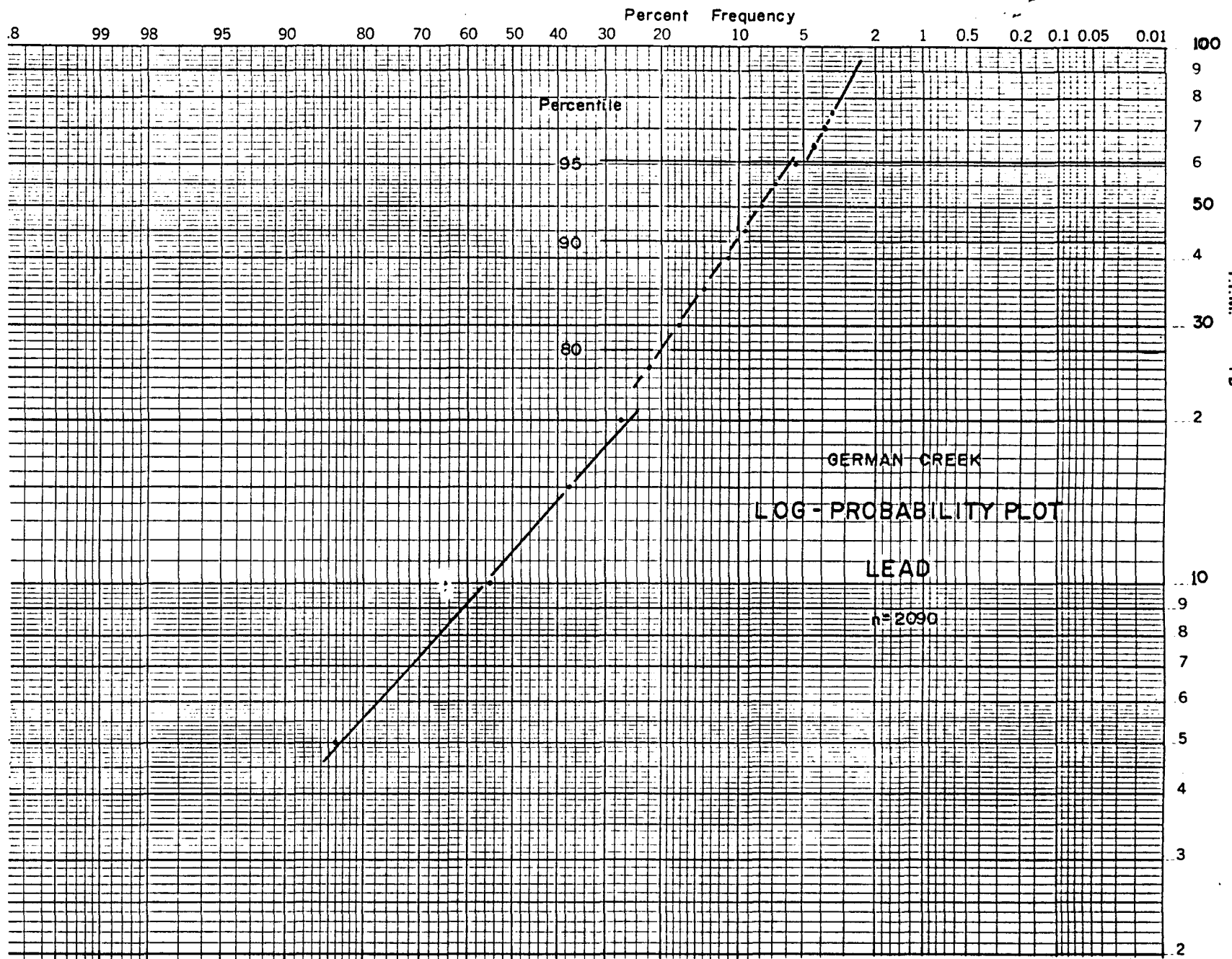


FIGURE 3

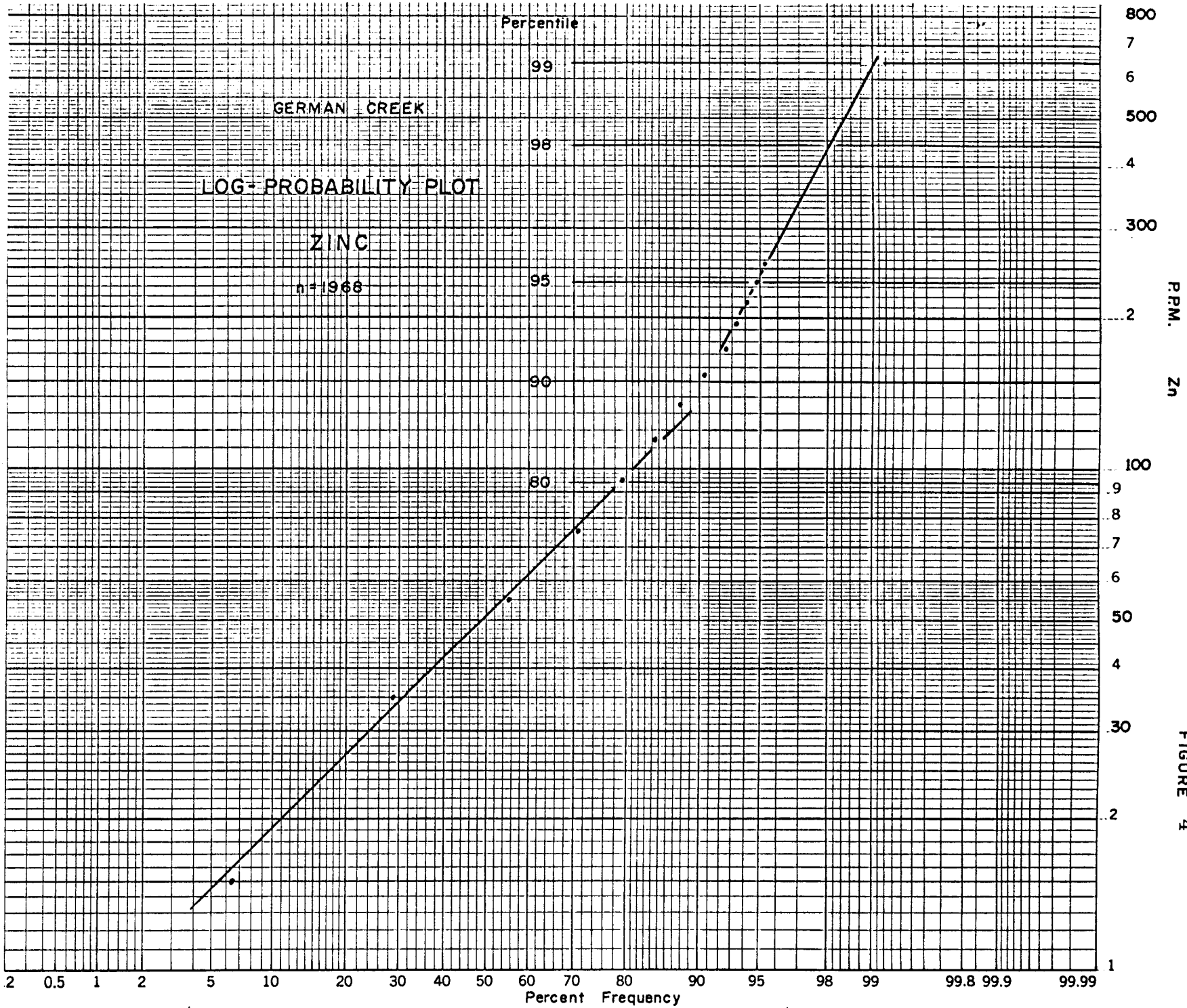


FIGURE 4

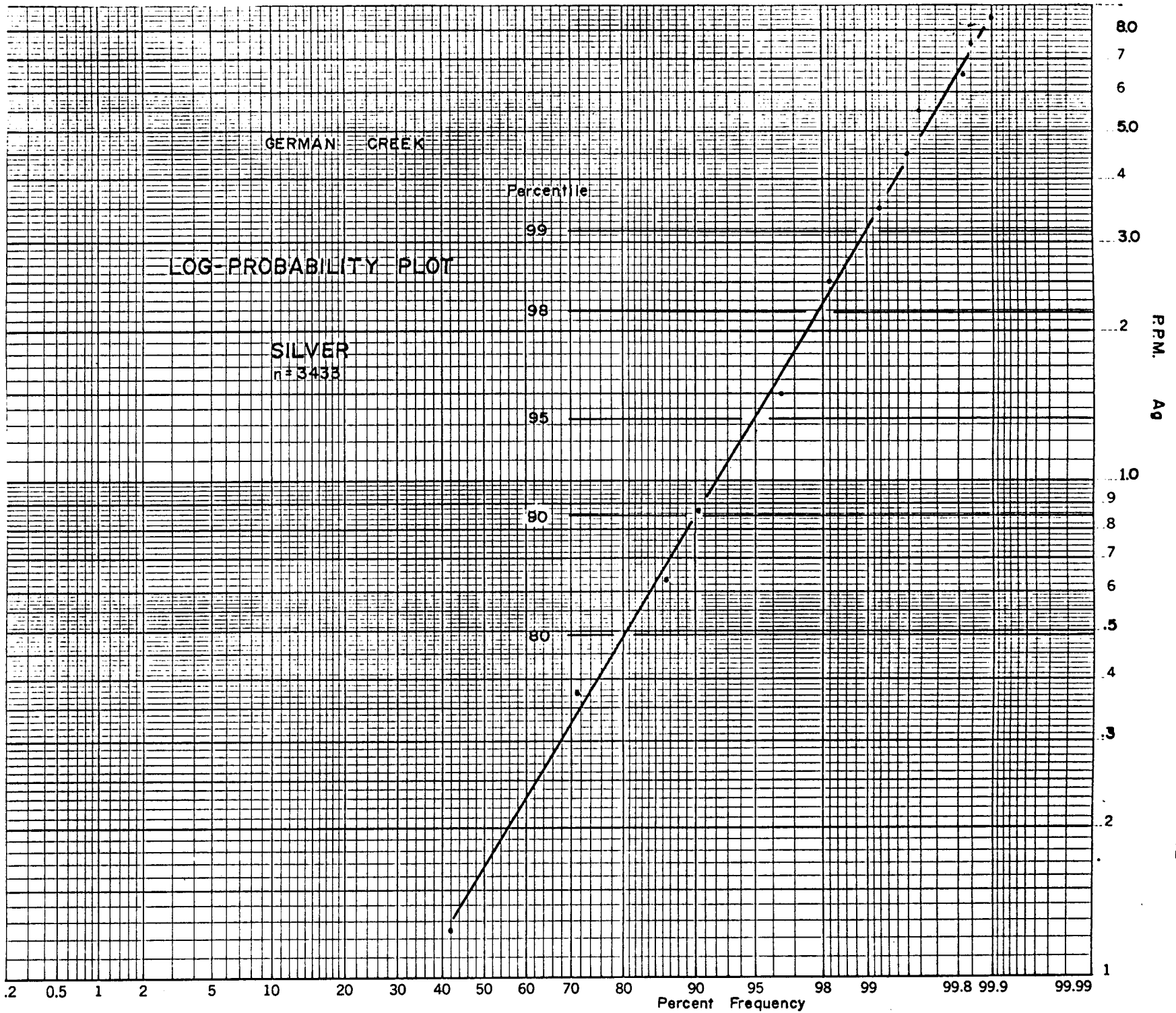


FIGURE 5

175 ppm may be explained in a manner similar to Pb, representing a peripheral alteration and anomalous zone, respectively. Lower values occur along the edges of the grid. The area of enhanced values is, as would be expected, more extensive than that for Pb. In a similar fashion, though, while it is centered on the siliceous pyroclastic unit, it transgresses a variety of rock types.

Silver shows a roughly straight line distribution throughout its range, with the exception of a fairly strong discontinuity at 6 ppm. Only 0.2 percent of the values occur above this limit, however. Another vague discontinuity occurs at 3 ppm, the 99th percentile value. Nearly 50 percent of the values occur in the lowest category, with all values below the 90th percentile, 0.85 ppm, in the lowest 4 classes. This range is believed to give a good representation of background silver values in soil. The range 0.85 to 3 ppm likely represents an overlap of background and anomalous ranges, while 3 to 6 ppm and greater than 6 ppm represent two levels of anomaly.

The geochemistry plans (see Pocket) have been contoured by hand. Because of the line spacing of 100 m., 200 m. and sometimes 400 m., and the sample spacing of 25 m. along the lines, there is a strong contouring bias in the direction normal to the lines. This contouring bias is supported by the original orientation of the grid, at right angles to the major stratigraphy and structure of the area. In addition, contouring proceeded with the lowest contour

line first. Using a very subjective "moving averages" method, this contour level was allowed to define trends for the higher contour values.

Two major anomalies have been identified; the Linecutter's Camp (LC) zone and the South Ridge (SR) zone. Both zones are well defined soil anomalies, although they differ somewhat. Both are well defined by Zn and Ag while the SR zone is relatively stronger in Cu than Pb. A Pb anomaly is best defined over the LC zone; while a strong Cu anomaly is present here, it is much more localized. This very rough zonation of Cu and Pb might suggest a hydrothermal source to the south and west, but this is not supported by Zn and Ag.

Secondary dispersion has modified these anomalies. Some down slope migration is to be expected, and many anomalies are concentrated towards the base of valley walls. In addition, anomalies which intersect the valley floor, particularly of German Creek, have been spread down stream. This is most evident along lines 0 and 2E, south of the base line.

## GEOPHYSICS

EM and magnetometer surveys were run on specified lines on the grid. These included 400 m. spaced lines in the center of the grid, from L18E to L18W. The magnetometer survey, using a Unimag proton precession magnetometer, was run using the geochem stations as measurement points, while the grid was re-chained with accurate horizontal control for the EM survey. This work was done using a Max - Min II horizontal loop system, with a 200 m. coil spacing. In addition, detailed follow-up, with a 100 m. spacing and utilizing all 5 frequencies, was conducted over the most strongly defined anomalies and along fill-in lines between these anomalies.

None of the rock types within the grid appears to present a strong magnetic signature. The profiles are quite flat and of little use in locating contacts. The EM survey, on the other hand, produced a large number of attractive conductors. The Geoterrex results are shown on sections in the pocket. These have been compiled with the geology, geochemistry, topography and magnetometer surveys on sections which are also included in the pocket. It can be seen from these sections that there is a strong correlation between the geology, geochemical anomalies and EM conductors. Modelling of the individual conductors has been done by Geoterrex, as indicated on their sections.

No further quantitative interpretations are planned at this time. The discussion below simply correlates conductor locations with geology and the strongest geochemical anomalies. On the advice of Anaconda's Geophysics Division in Denver, final interpretation of the German Creek geophysical results should await the completion of fill-in lines planned for the 1980 summer field season.

## DESCRIPTION OF ANOMALIES

Profiles showing topography, geology, geochemistry, magnetometer and EM are located in the pocket. Anomalies referred to in this section may be located on these profiles as well as the geochemistry plans. The two principal anomaly areas, the LC zone and the SR zone, will be discussed first. Finally, some of the peripheral EM anomalies will be described.

A feature of both the geochemical and geophysical responses is that they are strongest in the central part of the grid and they weaken towards the edges, particularly on the east for both methods and on the west for geochemistry. These effects correlate roughly with elevation, with the more deeply dissected central grid providing the best anomalies. In the southeast portion of the grid, heavy overburden cover helps to mask anomalies.

### LC- Central Zone

This strong EM response extends from 500 N on L4E through 400N to 500N on L6E to 400N on L10E, and shows good correlation with a strong geochemical anomaly. This relationship was confirmed with detailed and fill-in EM surveys. The anomaly is caused by up to 3 parallel and closely spaced bands, with depth to top of anomaly increasing to the west.

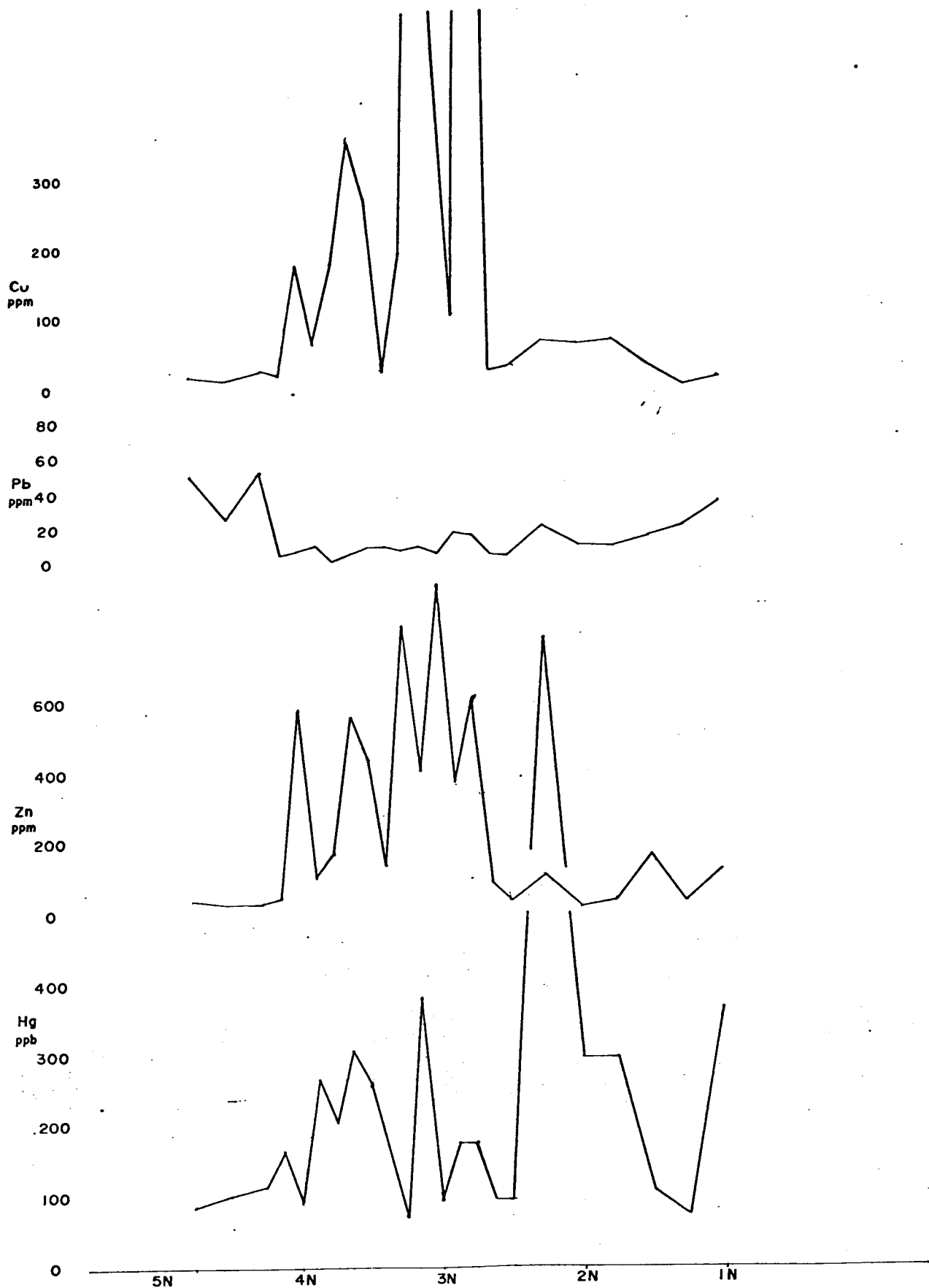
Analysis for Hg was done on two traverse lines from this vicinity. Highest values showed a close, but slightly offset, correlation with highest values for Zn and Cu. Profiles showing these results are included in Figures 6 and 7.

The coincidence of geochemical and geophysical anomalies, favorable geologic setting with evidence of folding, strong pyritization and some sericitization of the volcanic rocks, make this the prime area for follow-up geological and geochemical investigation. Additional linecutting, providing 50 m. spaced lines, has been completed through this area.

#### LC- North Zone

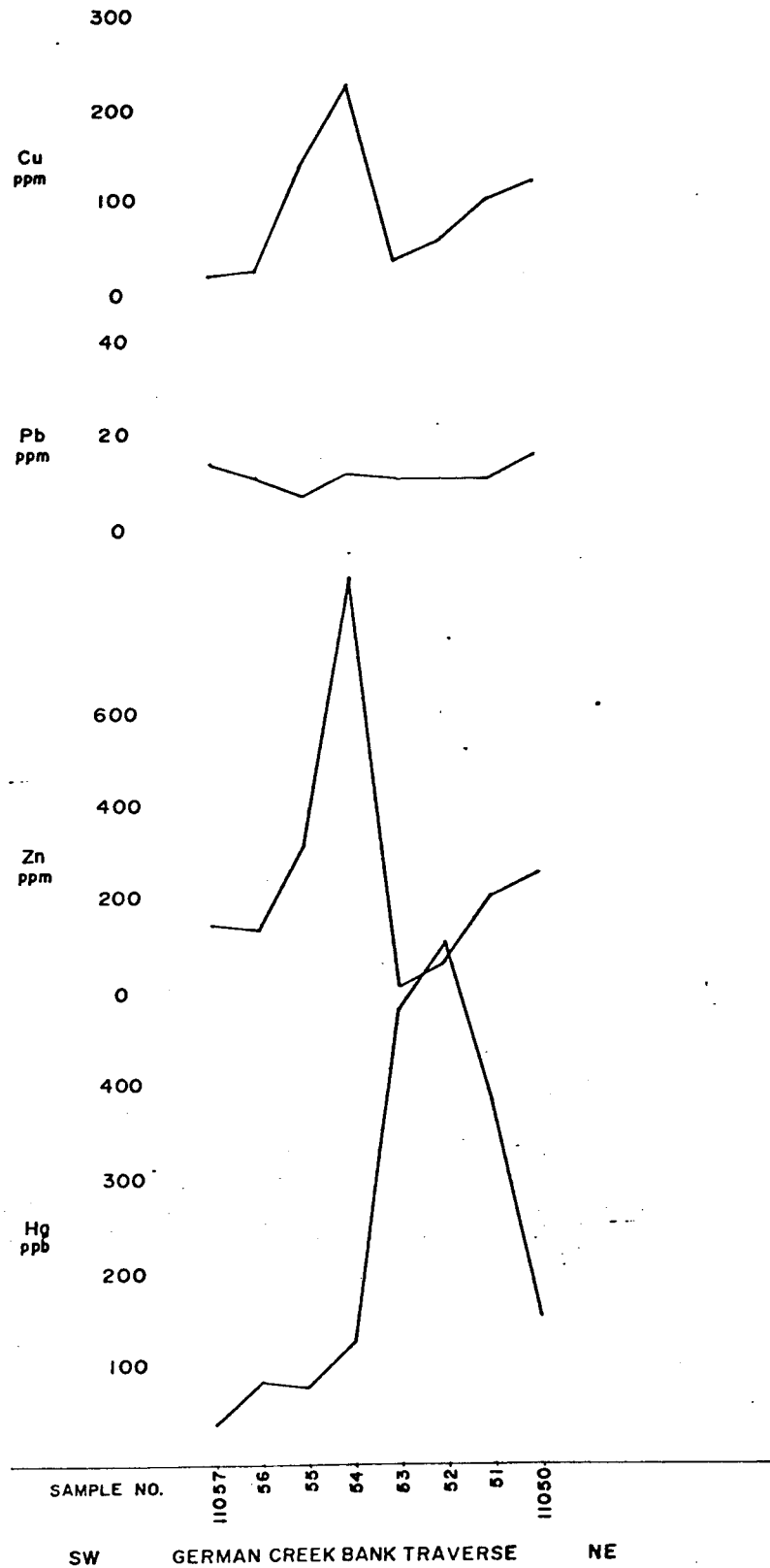
A series of anomalies from 600N on L2W to 800N on L10E, with probable extension to the west, correlates roughly with geochemical anomalies and with crystal tuff-shale contacts. Because of the 400 m. spacing between the EM grid lines, correlation between the lines is only tentative. The EM anomaly in the northeast shows a good correlation with anomalous Zn and Pb in soils. A weaker correlation with spotty high Pb is noted in the west. This anomaly zone is similar to, but weaker in intensity than the LC-Central Zone. It also has been included in the detailed 50 m. linecutting grid.

Figure 6: Geochemical profile with Hg, L4E



GERMAN CREEK L4+00E

Figure 7: Geochemical profile with Hg, German Creek traverse



### SR Zone

This is a broad anomaly zone which includes several EM conductors and a coincident geochemical anomaly. These extend between L14W, from 500N to 800N, and L2E, from 300N to 800N. Outcrop is sparse in this area, but the zone appears to correlate with the uppermost exposures of volcanic rocks in the grid. On the South Ridge slope, a relatively narrow flow unit of massive to amygdaloidal andesite and possibly dacite, with minor associated crystal tuff is indicated. On the south flank of Nyx Shoulder, pyroclastic breccia and laharic deposits with some crystal tuff are more prevalent.

The highest geochem values, 1040 ppm. Cu and 1280 ppm. Zn with 3.9 ppm. Ag, occur downslope from a moderate EM conductor on L14W. This trend continues, with slightly subdued geochem response and weaker EM anomalies through L10W, L6W and L2W. The EM and geochemical results are more erratic on L2E, possibly because this line follows along the bottom of the German Creek Valley.

This zone contains some of the highest geochemical anomalies encountered in the 1979 program. Analysis of a

small number of anomalous samples for Hg showed a strong correlation between high Zn and Cu in soils and anomalously high Hg values (see Figure 8).

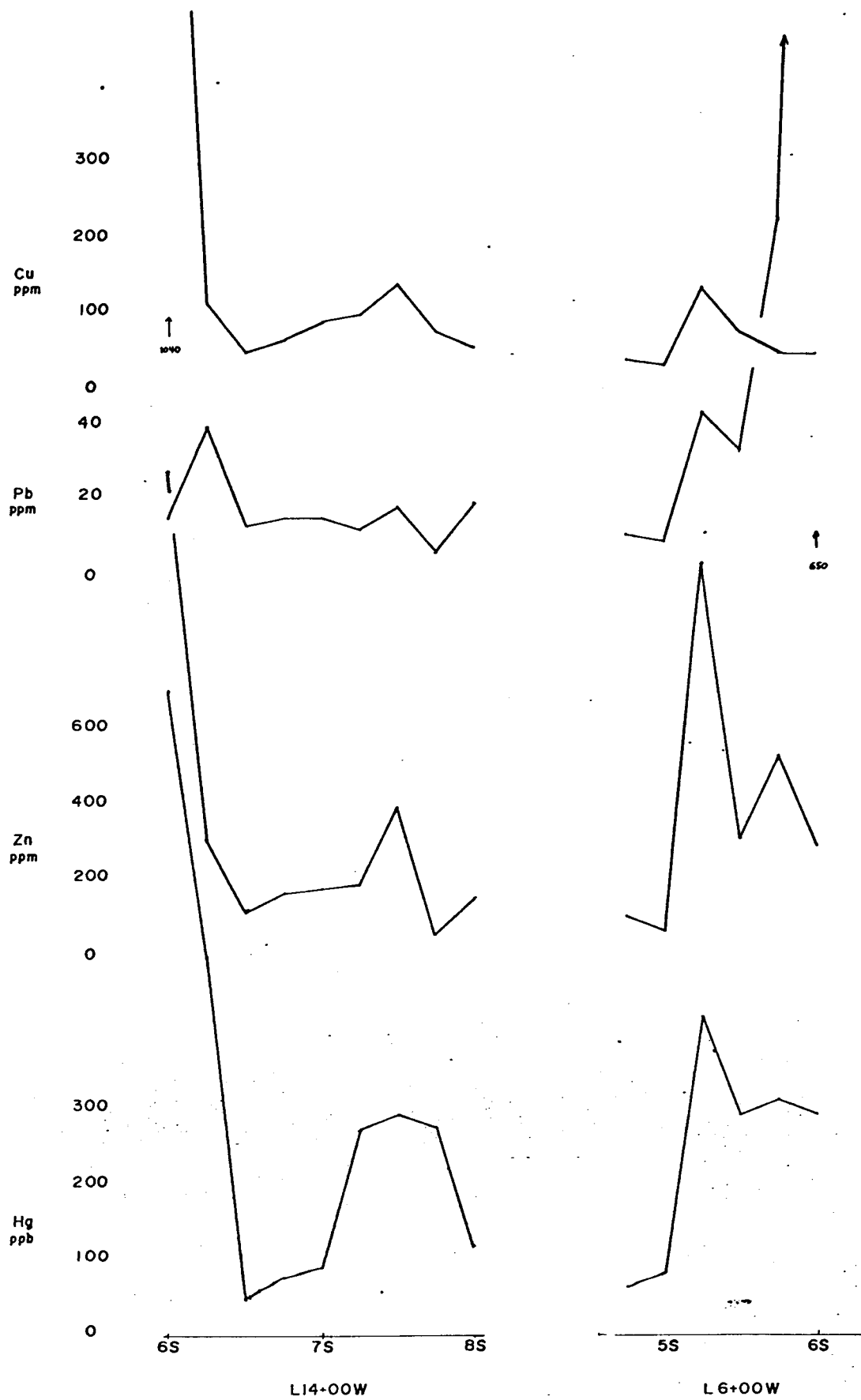
No explanation for these coincident geochemical and EM anomalies was determined in the field. However, they are localized along a contact zone which might be favorable for the occurrence of massive sulfides. A 100 m. spaced line grid has been cut over the area for further detailed geological and geochemical investigation.

#### Vulcan Ridge Trend

A series of EM conductors which show a strong potential for correlation were detected from 250N on L18W through to 200N on L6E. They follow a mapped contact between crystal tuff and overlying shale, lithic tuff and agglomerate. The original geochemical anomaly, detected first in the 1978 program, on the north side of Phobos Creek, may be a down-slope reflection of this anomaly source.

The quality of the conductors along this trend is quite variable, the best being on the west end. The Geotrex interpretations indicate a deep source, up to 50 m., thus explaining the lack of a coincident geochemical expression if the anomaly is indeed caused by buried massive sulfides.

Figure 8: Geochemistry profile with Hg, SR Zone



### Northwestern Anomalies

These are a series of conductors which form three sub-parallel trends which roughly follow the stratigraphy. The geochemical response throughout this area is weak. Most of the indicated EM conductors also appear to be weak, but final interpretation relative to geology and mineralization potential should await the report by Jack Corbett.

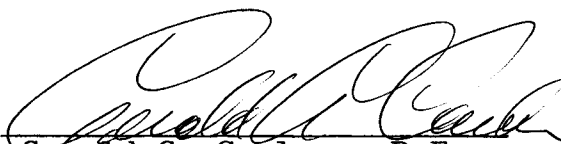
## APPENDIX

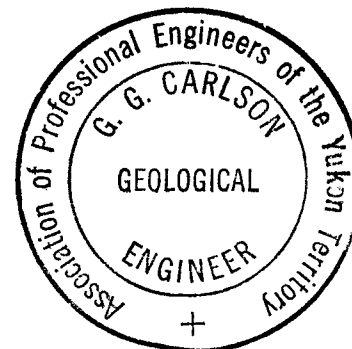


STATEMENT OF QUALIFICATIONS

I, GERALD G. CARLSON, of Apt. 703, 1045 Haro Street, Vancouver, B. C., do hereby declare:

1. That I received the degree of B.A.Sc. in Geological Engineering from the University of Toronto in 1969.
2. That I received the degree of M.S. in Geology from Michigan Technological University in 1974.
3. That I received the degree of Ph.D. in Geology from Dartmouth College in 1978.
4. That I have practiced geology in the field of mining exploration for seven years, and that I am a member of the Association of Professional Engineers of the Yukon Territory.
5. That I personally supervised the geological, geochemical and geophysical work on the STYX claim group described in this report.

  
Gerald G. Carlson, P.Eng.  
Regional Exploration Manager  
Western Canada



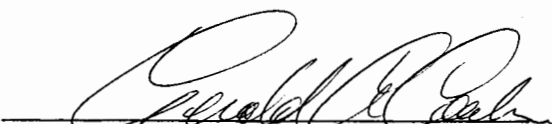
LIST OF EMPLOYEES

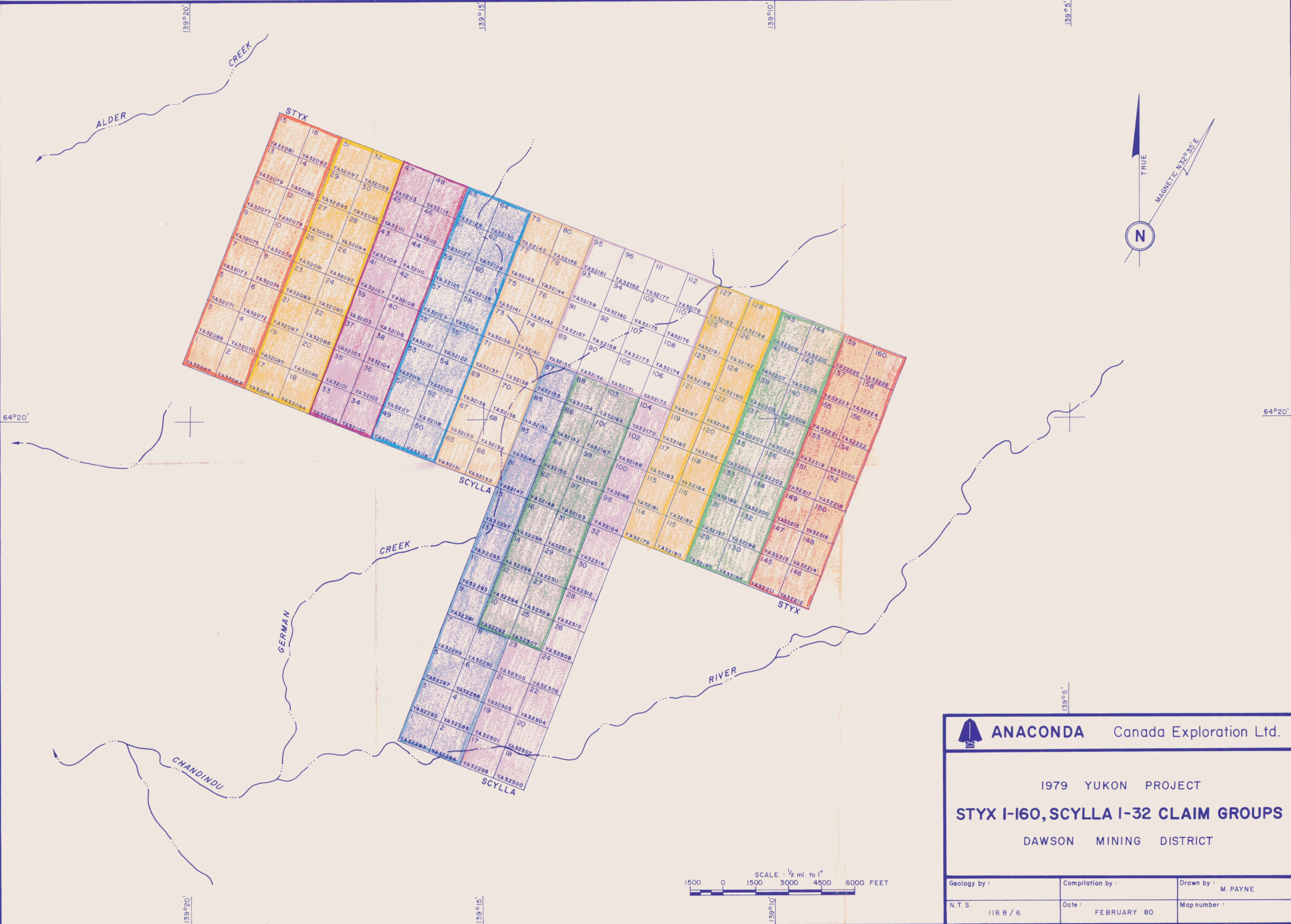
<u>Name</u>	<u>Title</u>	<u>Days on Project</u>
Gerald G. Carlson Apt. 703-1045 Haro St. Vancouver, B. C.	Geologist	18
Charles F. Roots R.R. #3 Wakefield, P.Q. JOX 3G0	Geologist	50
Kim Baldry 1121 Terra Court Port Coquitlam, B.C. V3B 4Z9	Sr. Geological Assistant	50
Bruce Gemmell 2170 Ottawa Ave. West Vancouver, B.C. V7V 2S4	Sr. Geological Assistant	20
Paul E. Kavanagh 463 Lytton Blvd. Toronto, Ont. M5N 1S5	Sr. Geological Assistant	11
John Magee 1003 Pescd Ave. Cornwall, Ont. K6J 2K1	Jr. Assistant	50
Matt Sanger 3973 St. Dominique Montreal, P.Q.	Jr. Assistant	50
Andris Kikauka General Deliver, Whistler, B. C.	Jr. Assistant	23
Dave van Dieren Place Vanier 1935 Lower Mall Vancouver, B. C.	Jr. Assistant	20
Marie le Doze 1397 Matthews Ave. Vancouver, B. C. V6H 1W7	Cook	50


STATEMENT OF EXPENSES

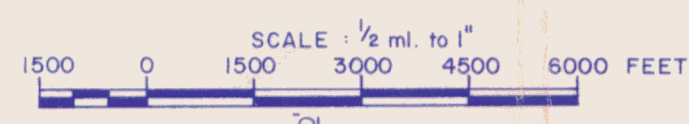
1. Baseline Surveys: Underhill & Underhill	\$ 15,330.21
2. Linecutting Jean Alix Co. Ltd.	18,479.00
3. Camp supplies - groceries	5,896.00
4. Salaries	21,483.50
5. Transportation - helicopter Trans North Turbo Air Ltd.	59,216.40
6. Geochemical Analysis Bondar-Clegg Ltd.	18,100.00
7. Geophysics Geoterrex Ltd.	17,980.82
	<hr/>
	\$156,485.93

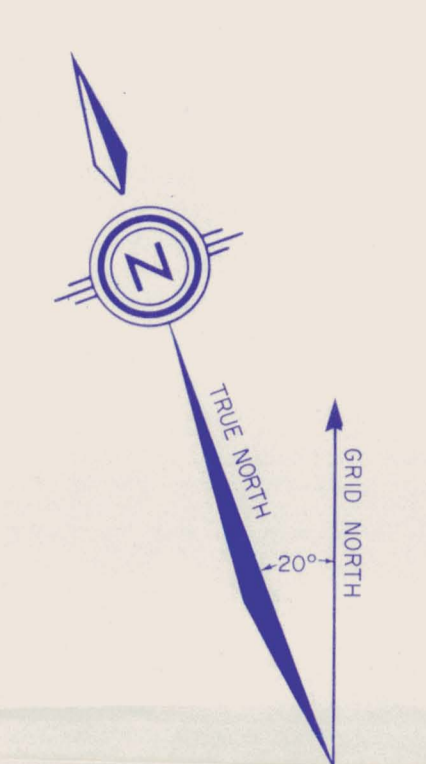
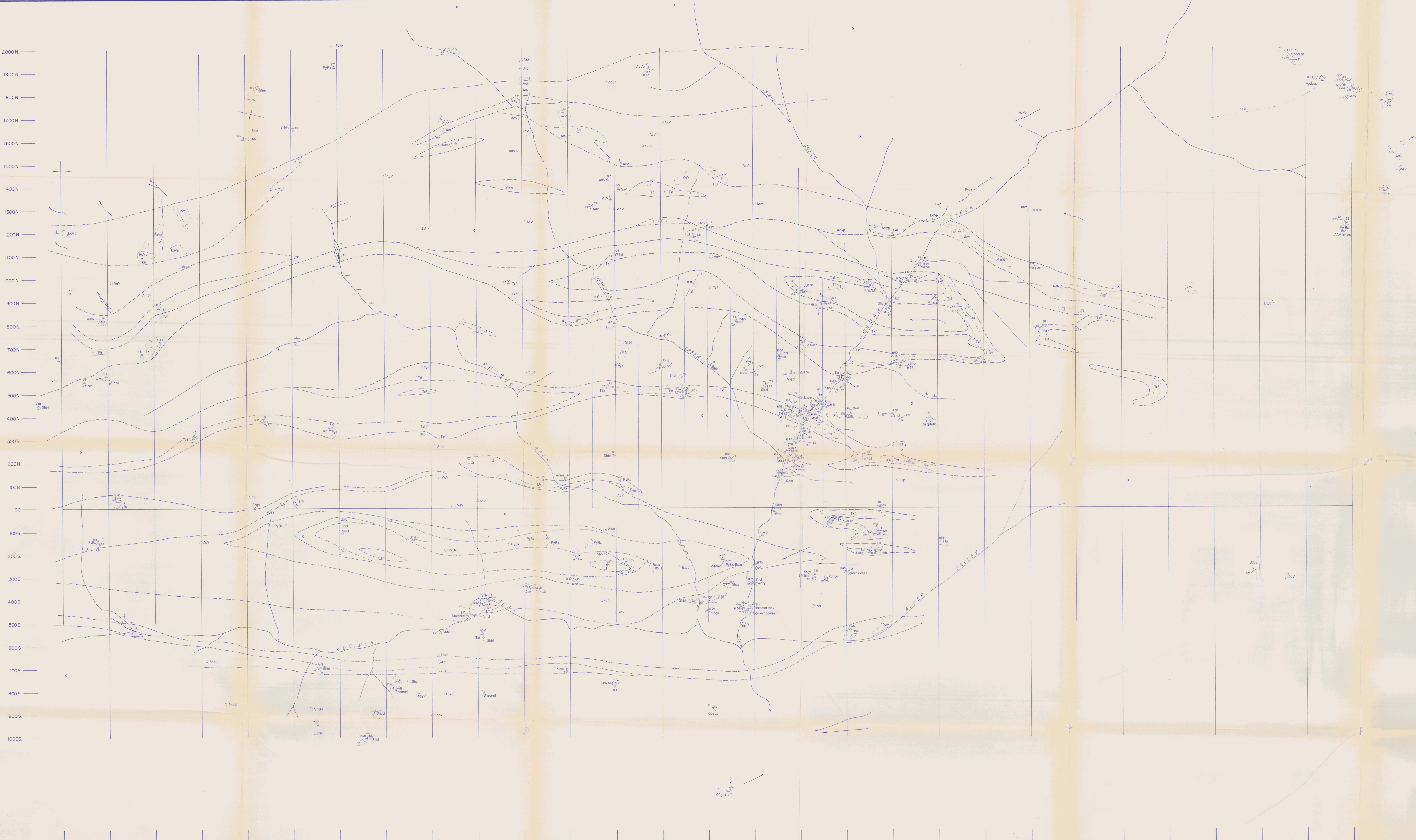
I declare the above expenditures to have been made in carrying out the exploration program on the STYX 1-160 claim group as described in this report. Copies of all invoices and certificates for all geochemical analyses are on file at Suite 200 - 1500 West Georgia Street, Vancouver, B. C.

  
Gerald G. Carlson, P.Eng.



 <b>ANACONDA</b> Canada Exploration Ltd.		
1979 YUKON PROJECT <b>STYX I-160, SCYLLA I-32 CLAIM GROUPS</b> DAWSON MINING DISTRICT		
Geology by :	Compilation by :	Drawn by : M. PAYNE
N.T.S. 116 B / 6	Date : FEBRUARY 80	Map number :

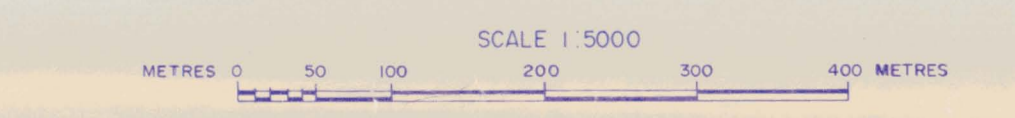




**GEOLOGIC LEGEND**

- SYMBOLS**
- Bedding, strike and dip
  - Jointing
  - Cleavage
  - Foliation
  - Direction of pillow tops (approx)
  - Geologic contact - mapped inferred, assumed
  - Fold axes - syncline, anticline, plunging
  - Minor fold axis
  - Limit of outcrop
  - Sulphides
  - Pyrite
  - Area of glacial drift
  - Escarpment
  - Landslide scar
  - Creek
  - Marsh
  - Station
  - Claim post

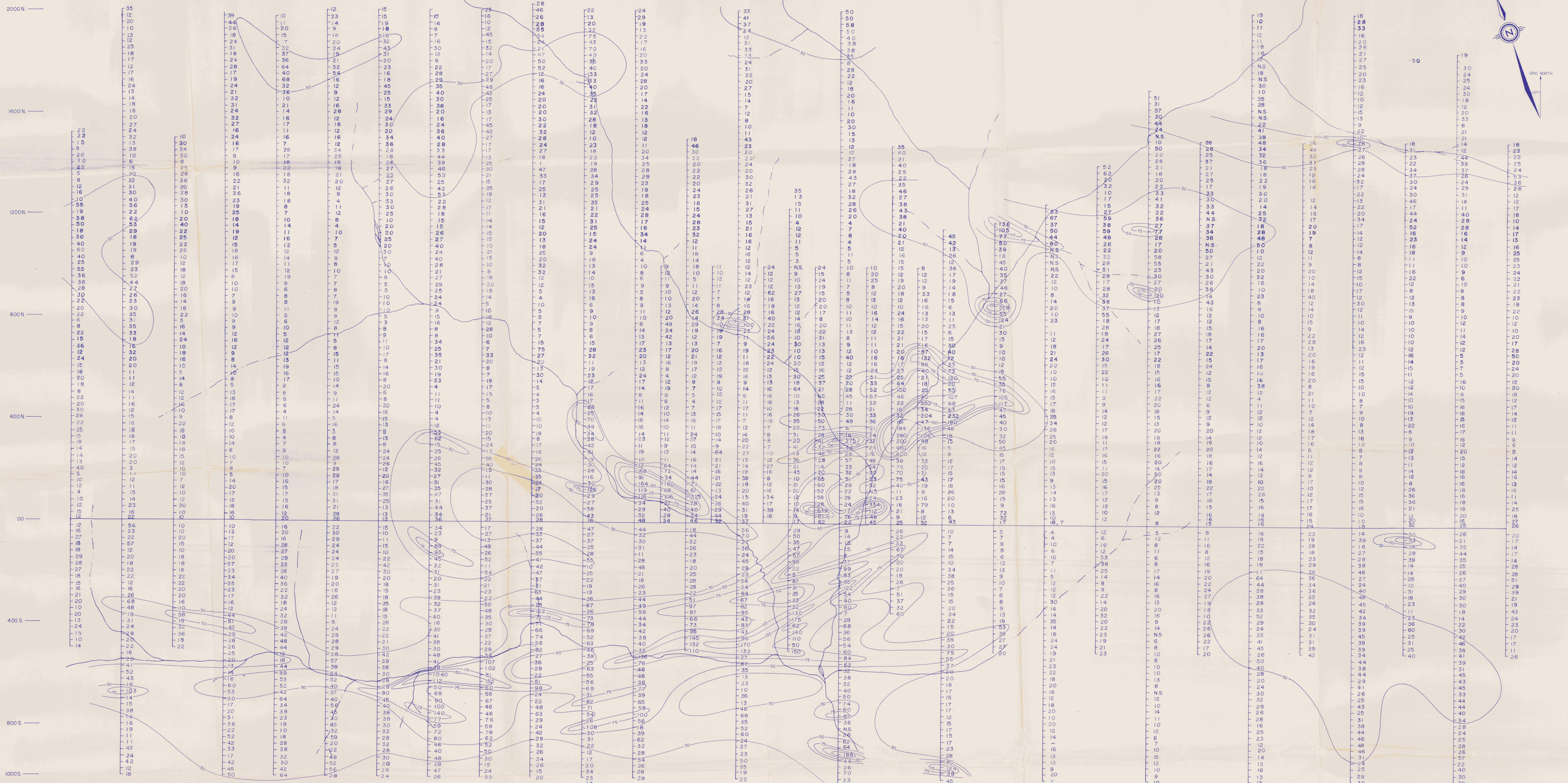
- ROCK UNITS**
- Ordovician - Silurian**
- C - Hood River Fm - chert, Cg - chert pebble conglomerate, Cb - chert breccia, Shc - cherty shale
- Proterozoic or later**
- IM - Intrusive Mafic - greenstone
  - Sh - Black Shale, C - chert, Arg - argillite, colours bl/black, br/brown, gr/grey, gr-green, or/orange
  - SS - Sandstone (minor)
  - Lh - Lather
  - PyBx - Pyroclastic breccia, Baco - calcareous breccia
  - T - Tuff, Tt - tuffaceous argill. tuff, Tq - quartz eye tuff, Tm - lignite tuff, Tw - welded tuff
- VOLCANIC FLOWS**
- AcV - acidic, amygdaloidal flow
  - AvV - andesitic, amygdaloidal flow, p - pillowed
  - DvV - dacitic amygdaloidal flow
  - BvV - basic amygdaloidal flows, p - pillowed
- Late Proterozoic and Cambrian**
- Shw - Moron weathering shale



ANACONDA CANADA EXPLORATION LTD.  
 1979 YUKON PROJECT  
**GERMAN CREEK GRID**  
 STYX I-160 CLAIM GROUP  
**GEOLOGIC PLAN**

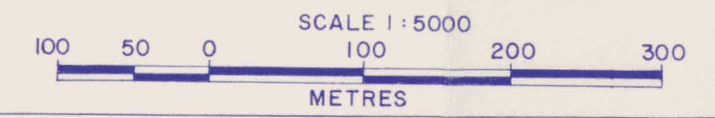
GEOLOGY BY:	COMPILATION:	DRAWN:
N.T.S.	G. CARLSON	Altair
DATE:	MAP NUMBER:	
116 B/6	DEC. 1979	

L 28W L 26W L 24W L 22W L 20W L 18W L 16W L 14W L 12W L 10W L 8W L 6W L 4W L 2W L 00 L 2E L 4E L 6E L 8E L 10E L 12E L 14E L 16E L 18E L 20E L 22E L 24E L 26E L 28E



CONTOUR VALUES

PPM	PERCENTILE
1150	99
1115	98
1075	95
1050	90
1030	80

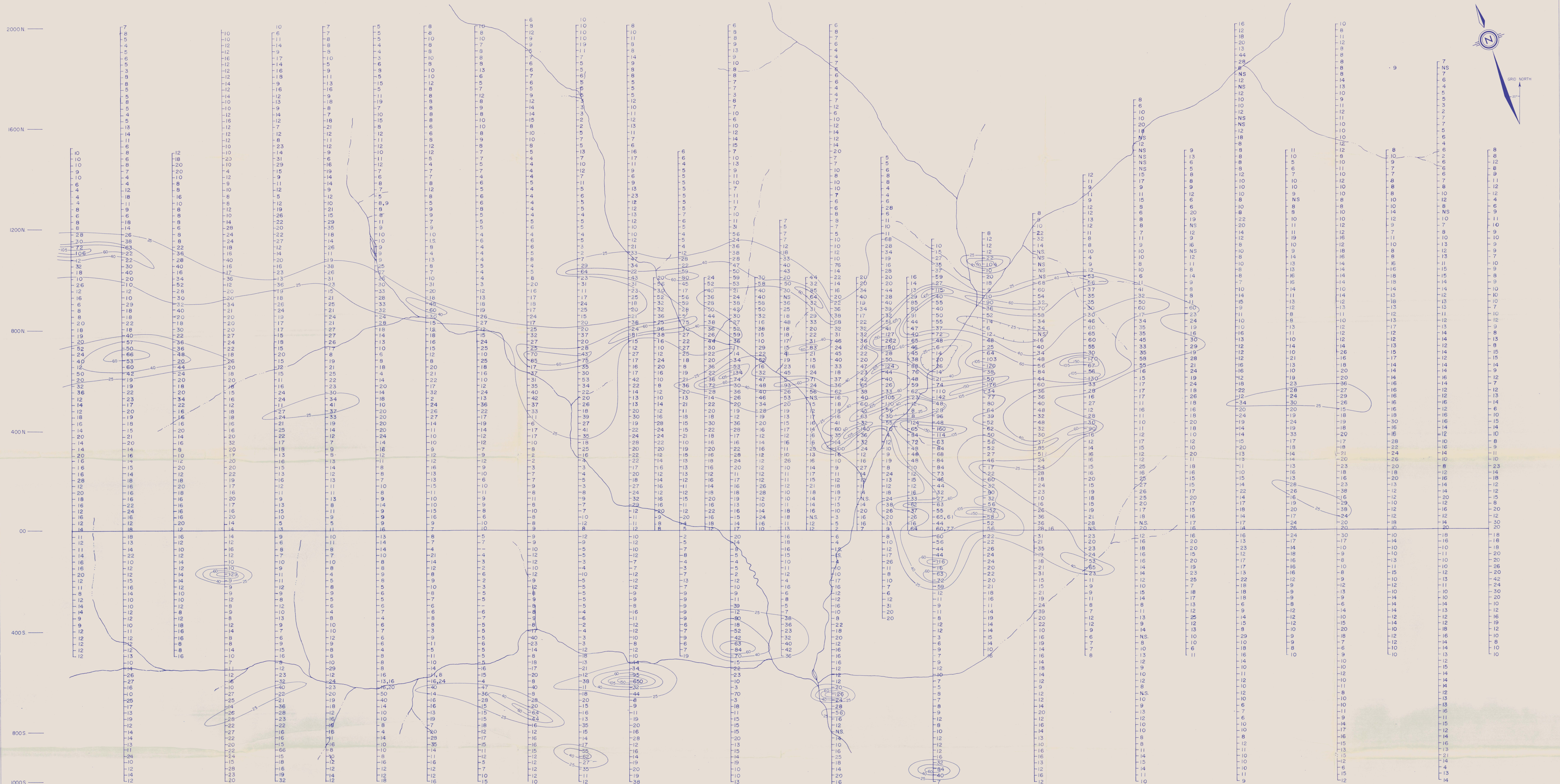
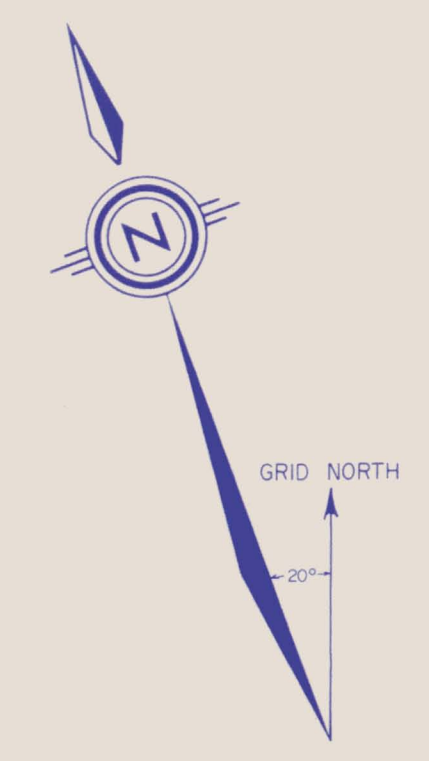


ANACONDA CANADA EXPLORATION LTD.

1979 YUKON PROJECT

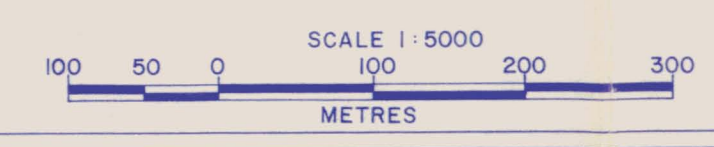
**GERMAN CREEK GRID**  
 STYX I-160 CLAIM GROUP  
 GEOCHEMISTRY PLAN  
 COPPER IN SOILS (PPM)

GEOLGY BY: N.T.S. 116 B/6  
 COMPILATION: G. CARLSON  
 DATE: DEC. 1979  
 DRAWN: A.Irwin  
 MAP NUMBER:



**CONTOUR VALUES**

PPM	PERCENTILE
150	99
105	98
60	95
40	90
25	80



ANACONDA CANADA EXPLORATION LTD.

1979 YUKON PROJECT

**GERMAN CREEK GRID**

STYX 1-160 CLAIM GROUP

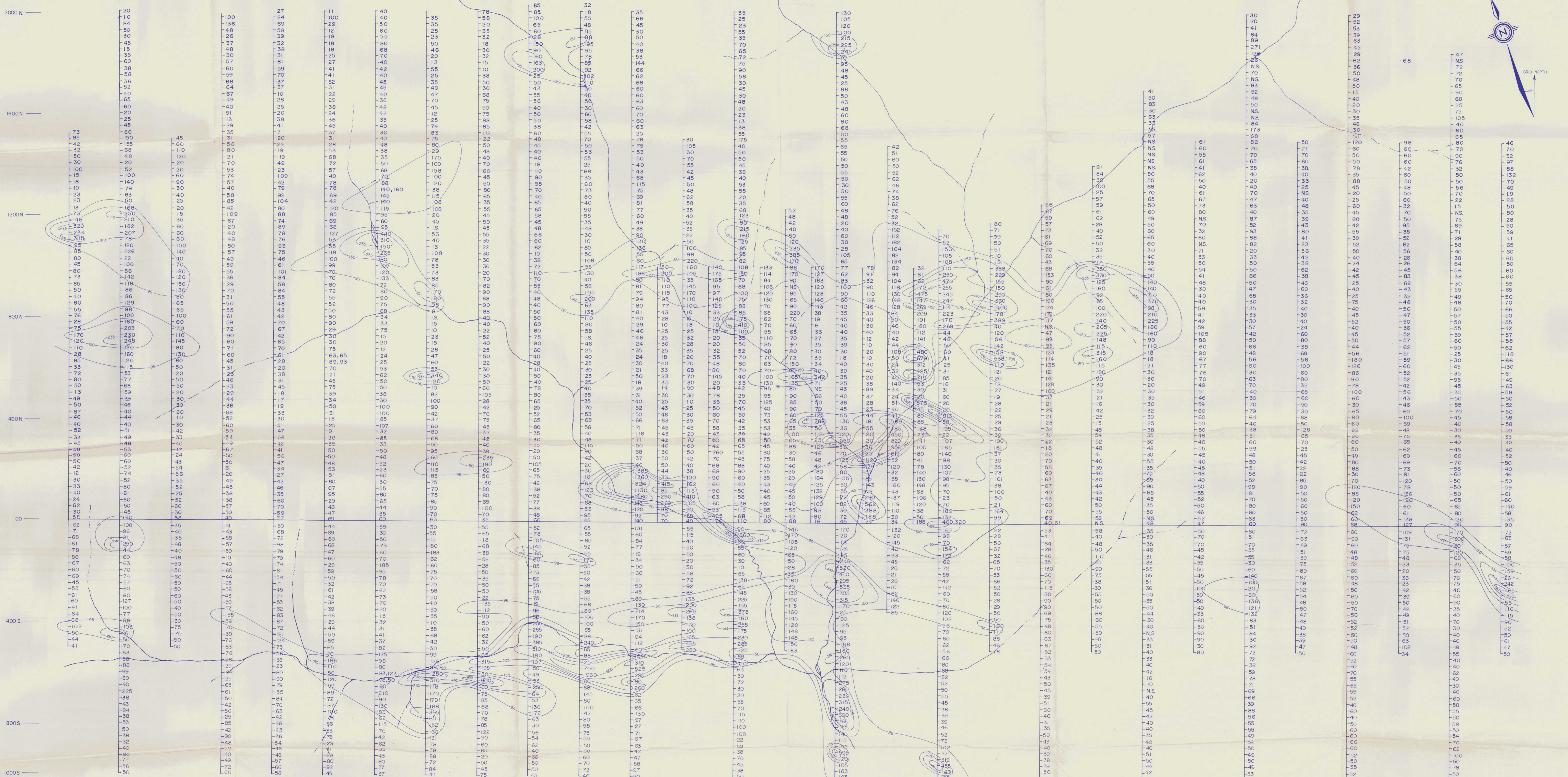
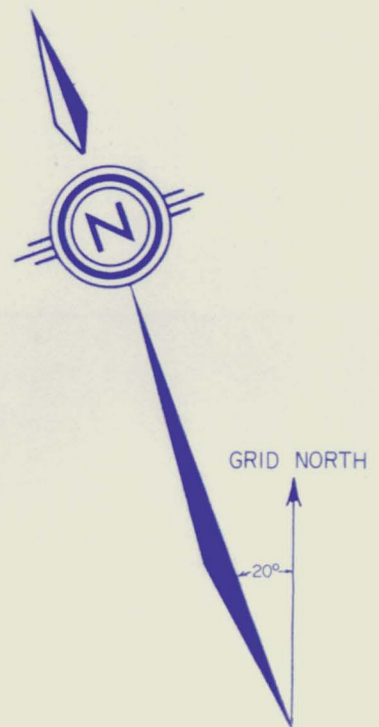
GEOCHEMISTRY PLAN

LEAD IN SOILS (PPM)

COMPILATION: G. CARLSON  
 DRAWN: Altair  
 DATE: DEC. 1979  
 MAP NUMBER: 116 B/6

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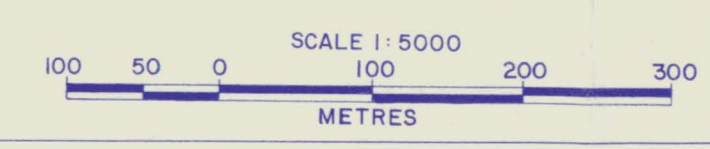
2000 N  
1600 N  
1200 N  
800 N  
400 N  
00  
400 S  
800 S  
1000 S



CONTOUR VALUES

PPM	PERCENTILE
+650	99
+440	98
+235	95
+150	90
+96	80

L 28 W      L 24 W      L 20 W      L 16 W      L 12 W      L 8 W      L 4 W      L 0      L 4 E      L 8 E      L 12 E      L 16 E      L 20 E      L 24 E



ANACONDA CANADA EXPLORATION LTD.

1979 YUKON PROJECT

**GERMAN CREEK GRID**

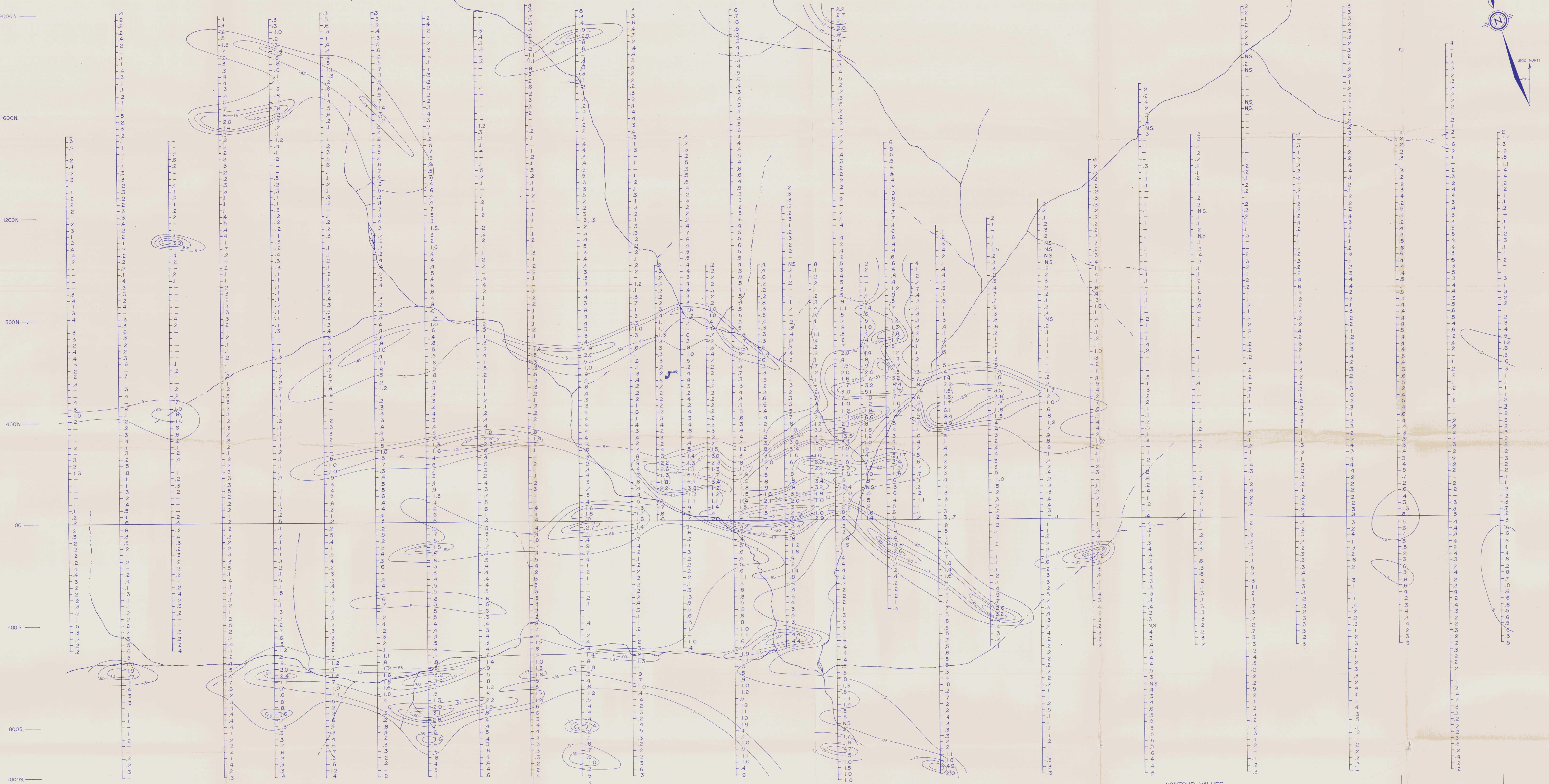
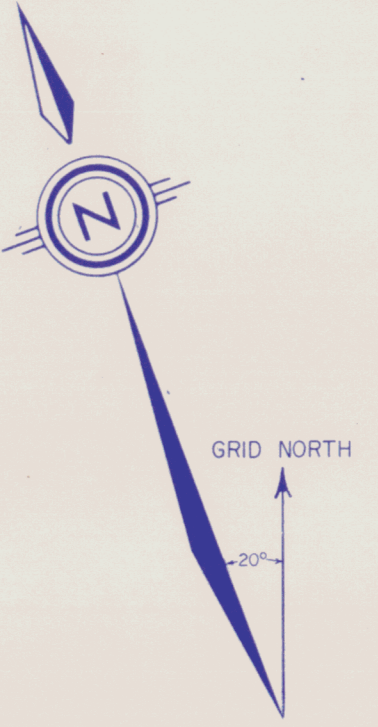
STYX I-160 CLAIM GROUP

GEOCHEMISTRY PLAN

ZINC IN SOILS (PPM)

GEOLOGY BY: \_\_\_\_\_ COMPILATION: G. CARLSON DRAWN: Aitair

N.T.S. 116 B/G DATE: DEC. 1979 MAP NUMBER: \_\_\_\_\_



**CONTOUR VALUES**

PPM	PERCENTILE
+3.0	99
+2.0	98
+1.3	95
+0.85	90
+0.5	80



ANACONDA CANADA EXPLORATION LTD.

1979 YUKON PROJECT

**GERMAN CREEK GRID**

STYX 1-160 CLAIM GROUP

GEOCHEMISTRY PLAN

SILVER IN SOILS (PPM)

GEOLOGY BY:	COMPLETION:	DRAWN:
NTS	G. CARLSON	AH/air
116 B/6	DATE:	MAP NUMBER:
	DEC. 1979	

L.28W L.24W L.20W L.16W L.12W L.8W L.4W L.00 L.4E L.8E L.12E L.16E L.20E L.24E L.28E

2000N  
1600N  
1200N  
800N  
400N  
00  
400S  
800S  
1000S

SOUTHERLY TRAVERSE ALONG GERMAN CREEK			
STATION	CHAINAGE	ELEV (metres)	UTM GRID
111	0.000	736.825	7135720.33N 585135.25E
112	100.010	728.020	
113	200.045	723.185	
114	300.330	725.195	
115	400.845	718.375	
116	500.800	708.060	
117	604.445	704.800	
118	605.765	707.620	7135187.75N 584825.06E
119	700.035	704.030	
120	800.005	701.485	
121	936.260	695.845	7134876.22N 584847.22E

NORTHERLY TRAVERSE ALONG GERMAN CREEK			
STATION	CHAINAGE	ELEV (metres)	UTM GRID
111	0.000	736.825	7135720.33N 585135.25E
112	30.075	738.225	
113	100.050	743.020	
114	200.040	745.840	
115	300.065	748.755	
116	400.010	754.855	7136058.40N 585511.25E
117	500.075	760.705	
118	700.050	765.705	
119	700.005	774.465	
120	800.035	777.635	
121	800.555	782.170	
122	1000.000	787.355	
123	1150.010	791.030	7136358.05N 586068.71E
124	1200.220	798.555	
125	1300.240	802.125	
126	1400.110	812.616	
127	1400.605	824.025	
128	1400.320	830.470	
129	1807.017	864.355	7136370.02N 586408.26E



Point #1 Station 155 N 1500' R April 5/70 Peter Venkema  
 Point #2 Station 150 N 1500' R April 5/70 Peter Venkema  
 Point #3 Station 154 N 1500' R April 5/70 Peter Venkema  
 Point #4 Station 153 N 1500' R April 5/70 Peter Venkema

Point #1 Station 70 N 1500' R April 3/70 Roger Wallace  
 Point #2 Station 71 N 1500' R April 3/70 Roger Wallace  
 Point #3 Station 72 N 1500' R April 3/70 Roger Wallace  
 Point #4 Station 73 N 1500' R April 3/70 Roger Wallace

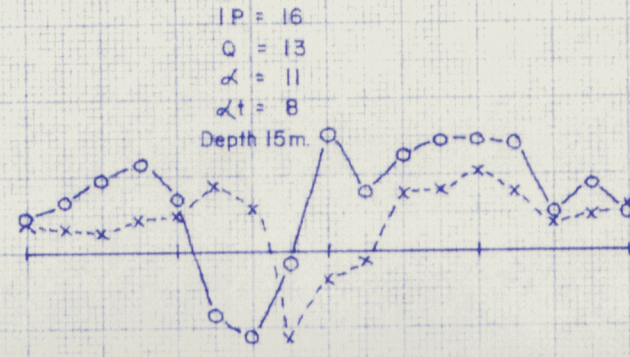
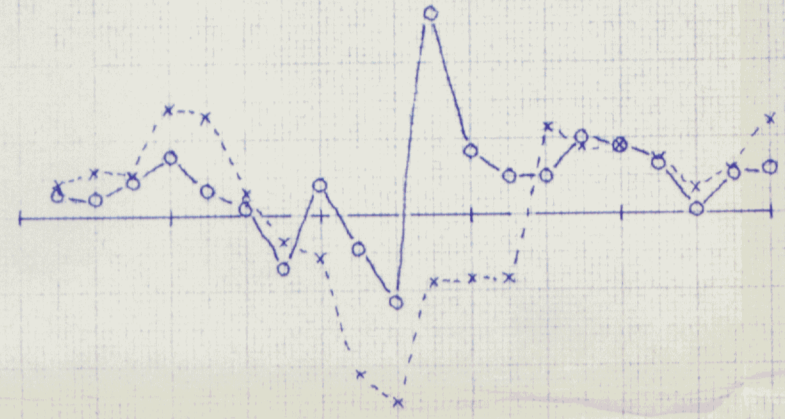
Point #1 Station 87N 1500' R April 5/70 Jan Berlmeyer  
 Point #2 Station 88N 1500' R April 5/70 Jan Berlmeyer  
 Point #3 Station 89 N 1500' R April 5/70 Jan Berlmeyer  
 Point #4 Station 90 N 1500' R April 5/70 Jan Berlmeyer

**LEGEND**  
 Iron Bars   
 Traverse   
 UTM coordinates: The coordinates derived from the Geodetic Survey of Canada 1960 grid are referred to UTM Zone 18N. Distances have been converted to sea level and to the horizontal plane by applying a combined conversion factor of 0.999485.  
 Bearings are astronomic derived from solar observation and are referred to the central meridian of UTM Zone 18N.

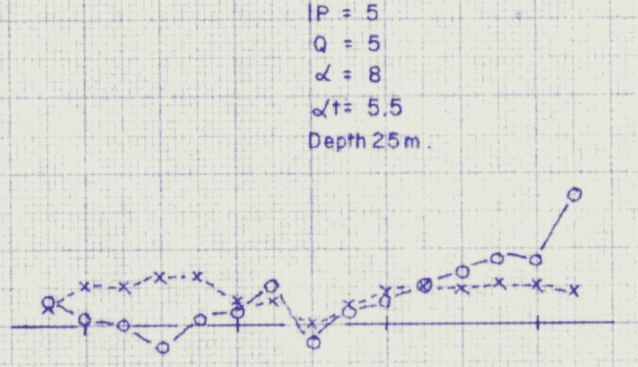
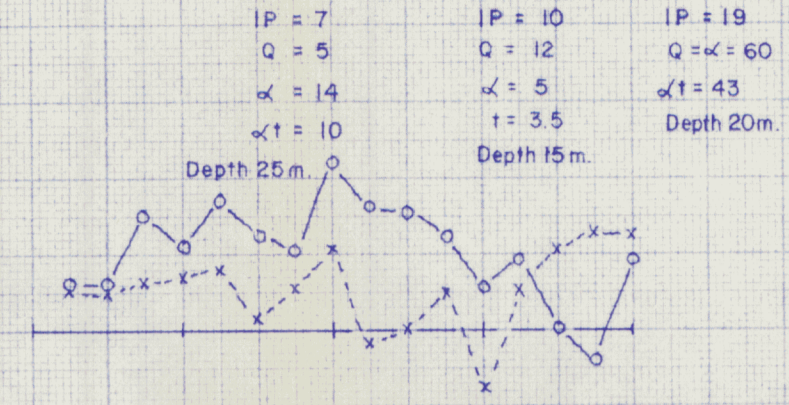
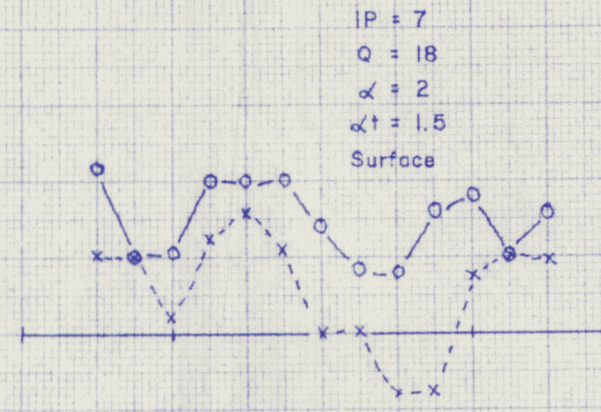
STATION	CHAINAGE	ELEV (metres)	UTM GRID
WEST			
DIM	1.100	1518.82	7135641.13N 584012.10E
34	12.045	848.515	
35	18.045	847.665	
15 Hub 1	18.245	786.60	
36	25.045	777.70	
Creek	24.00	758.00 E	
37	30.045	750.13	
38	40.355	828.00	
39	40.40	875.875	
T. Hub 2	45.00	824.555	
T. Hub 3	52.036	825.38	
100	100.135	828.04	
T. Hub 4	100.135	846.865	
101	120.015	837.185	
102	140.031	830.335	
T. Hub 5	155.264	1058.345	
T. Hub 6	150.00	1063.545	
103	160.10	1063.71	
T. Hub 7	163.35	1060.00	
T. Hub 8	176.035	1051.845	
104	180.815	1048.13	
105	200.20	1035.885	
T. Hub 9	217.855	1004.005	
106	215.045	1024.81	
107	230.25	1100.70	
T. Hub 10	247.615	1105.555	
T. Hub 11	251.445	103.185	
T. Hub 12	256.04	1052.00	
108	260.345	1075.64	
109	270.05	1064.05	

STATION	CHAINAGE	ELEV (metres)	UTM GRID
EAST			
34	0.00	848.515	
110	30.435	845.47	
111	12.74	736.82	7135720.33N 585135.25E
Spike 13	305.60	735.205	
268	401.655	757.64	
263	600.82	808.62	
264	700.605	808.405	
265	814.28	1001.08	7135510.50N 585711.25E
Spike 14	874.085	855.00	
Spike 15	961.26	852.83	
266	1001.245	837.47	
Spike 16	1155.00	863.575	
267	1150.515	834.835	
268	1401.18	844.415	
269	1602.27	823.285	
270	1801.045	1011.665	
Spike 17	1835.555	1026.025	
271	1850.84	1031.05	
Spike 18	2008.485	1033.385	
Spike 19	2075.115	1033.085	
272	2200.65	1031.40	
Spike 20	2238.635	1026.03	
Spike 21	2283.21	1018.485	
273	2350.875	891.33	
274	2600.31	833.685	
275	2800.27	852.805	

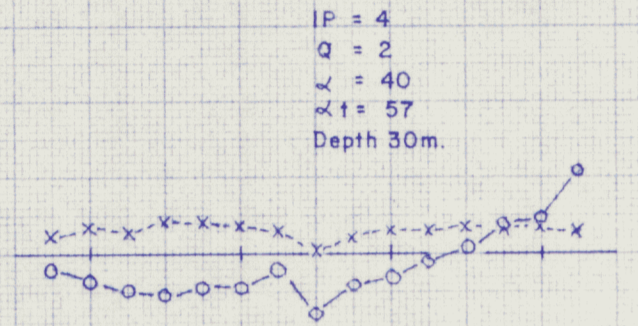
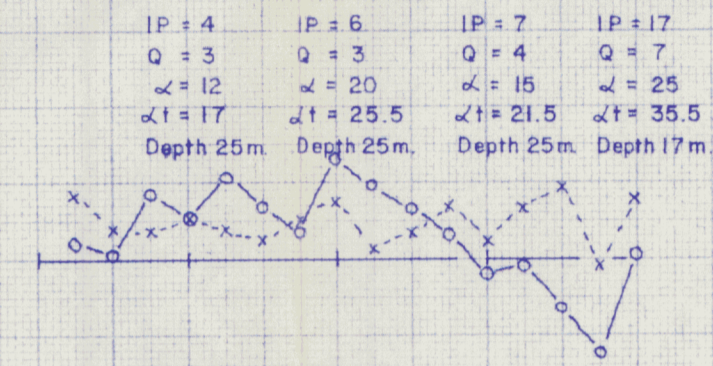
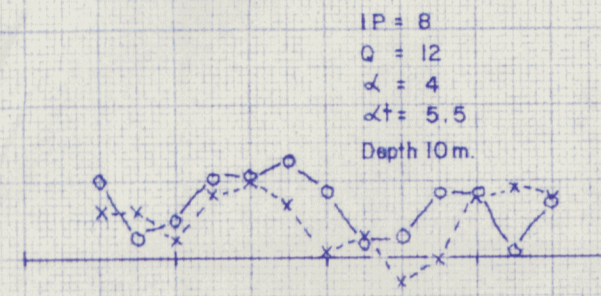
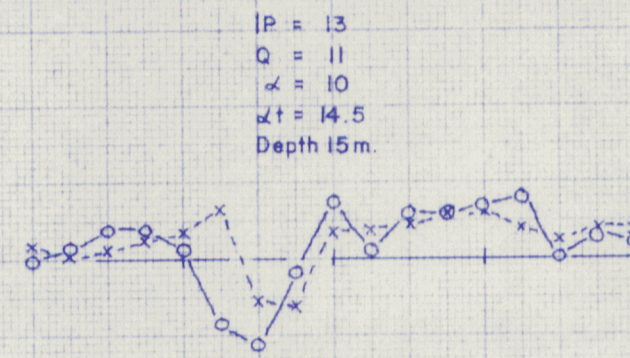
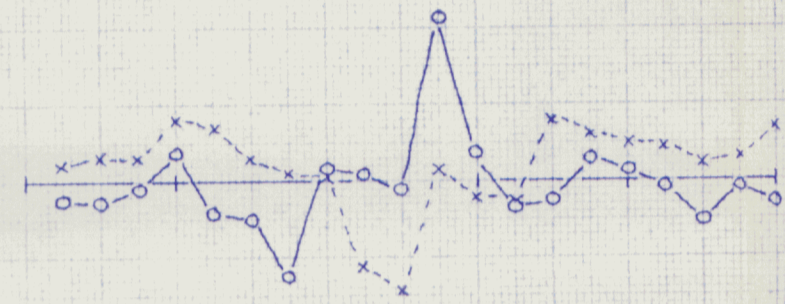
3555 Hz



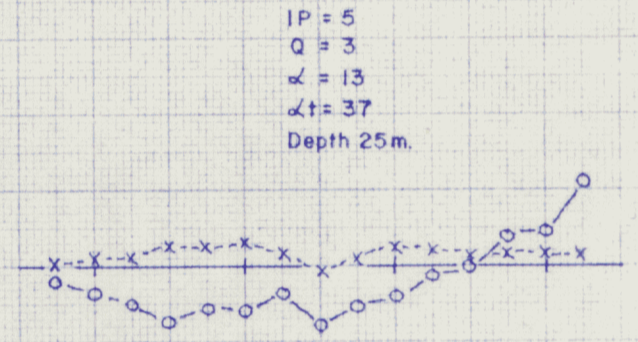
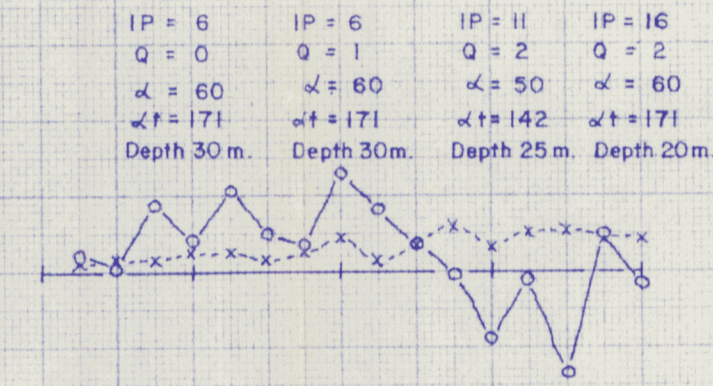
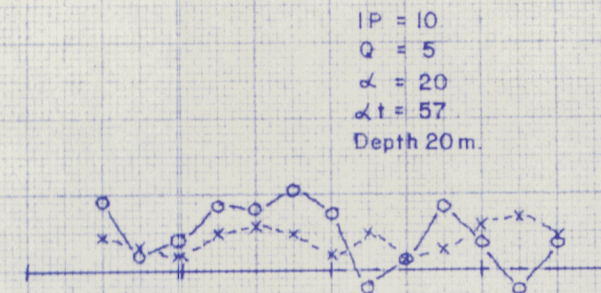
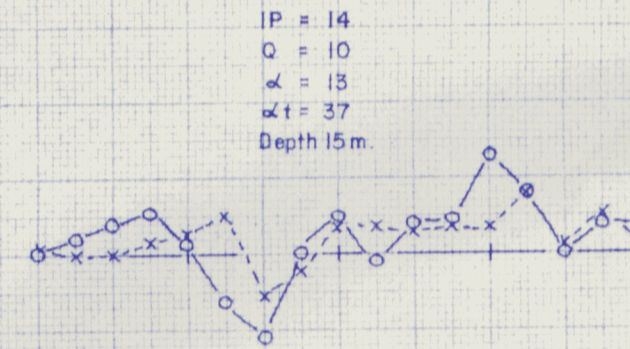
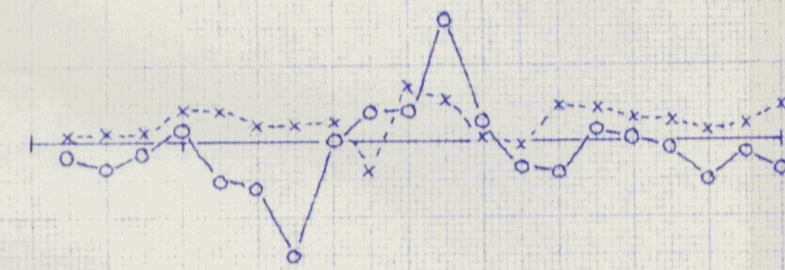
Gold conductor  
IP peak displaced  
Q "



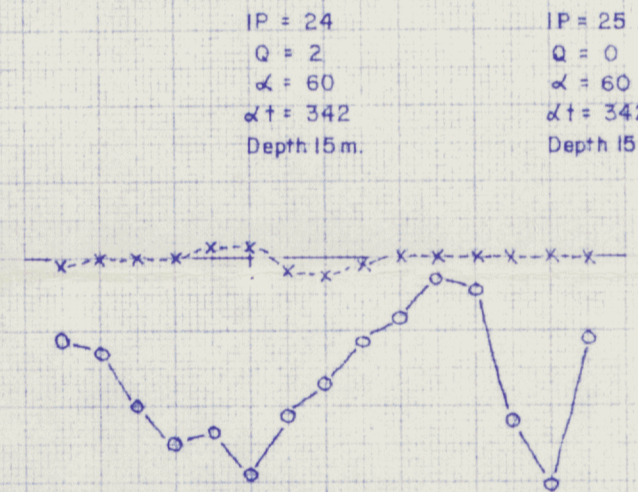
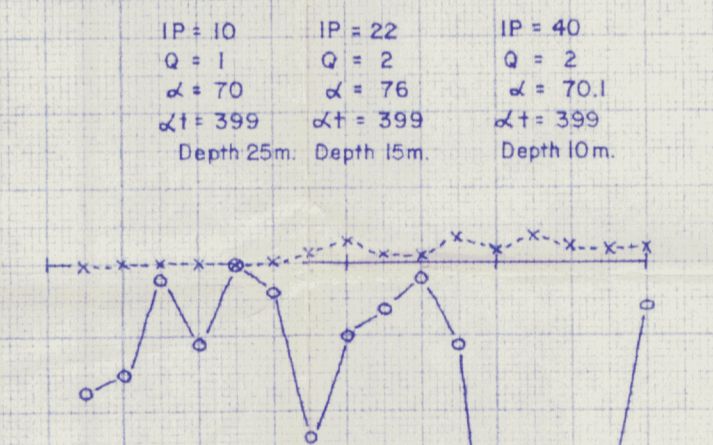
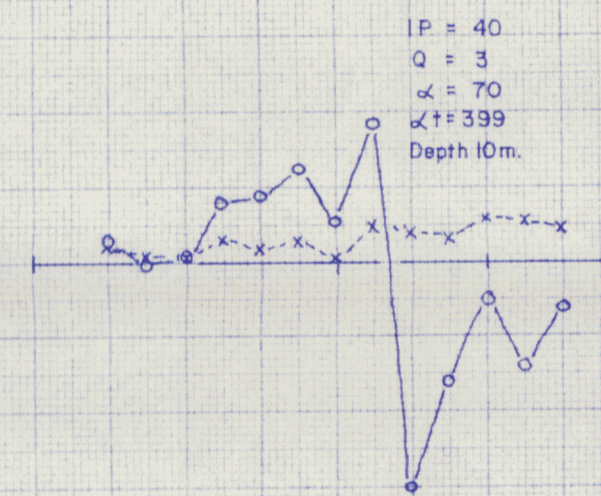
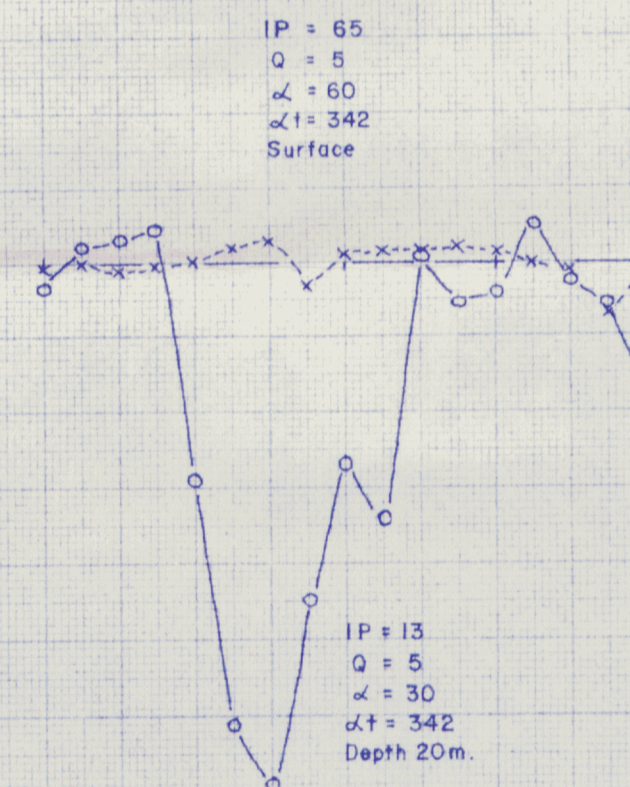
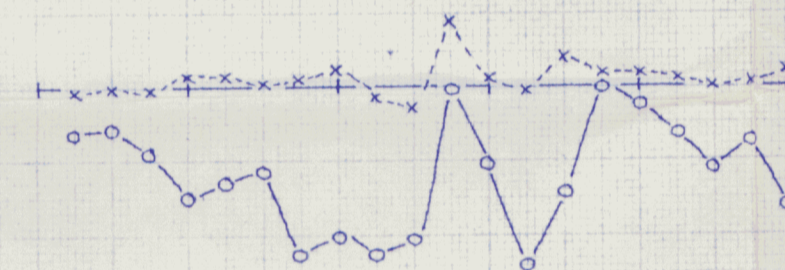
1777 Hz



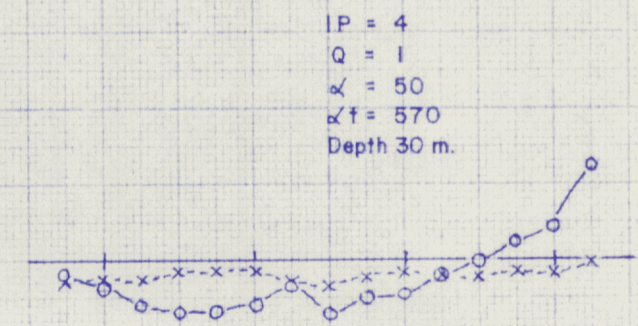
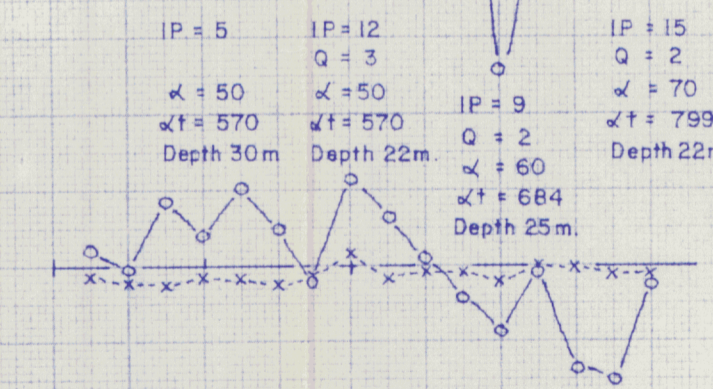
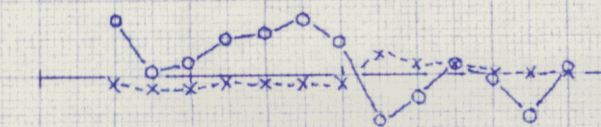
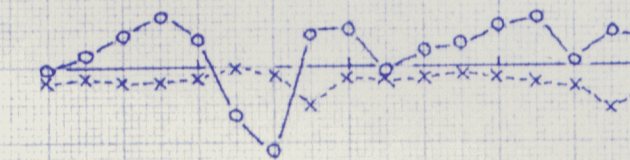
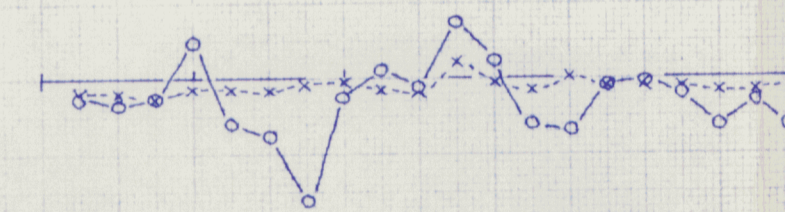
888 Hz



444 Hz



222 Hz



2+00N 4+00N 6+00N

L6E

4+00N 6+00N 8+00N

L2W

2+00N 4+00N 6+00N

L4E

3+00E

L14W

5+00E

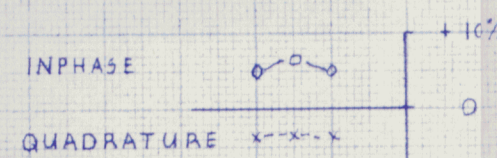
7+00E

7+00N

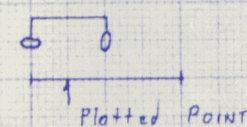
3+00N

4+50N

L18W



50 m. CABLE SPACING



SURVEYED & COMPILED BY **geoterrex** FOR ANACONDA CANADA EXPLORATIONS

H.E.M. SURVEY, YUKON

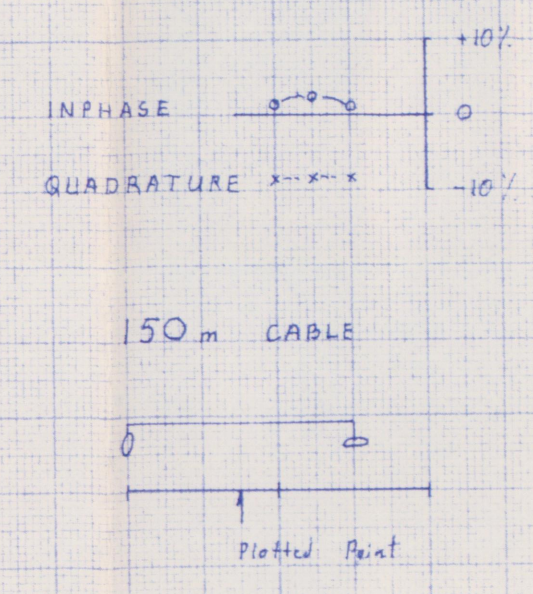
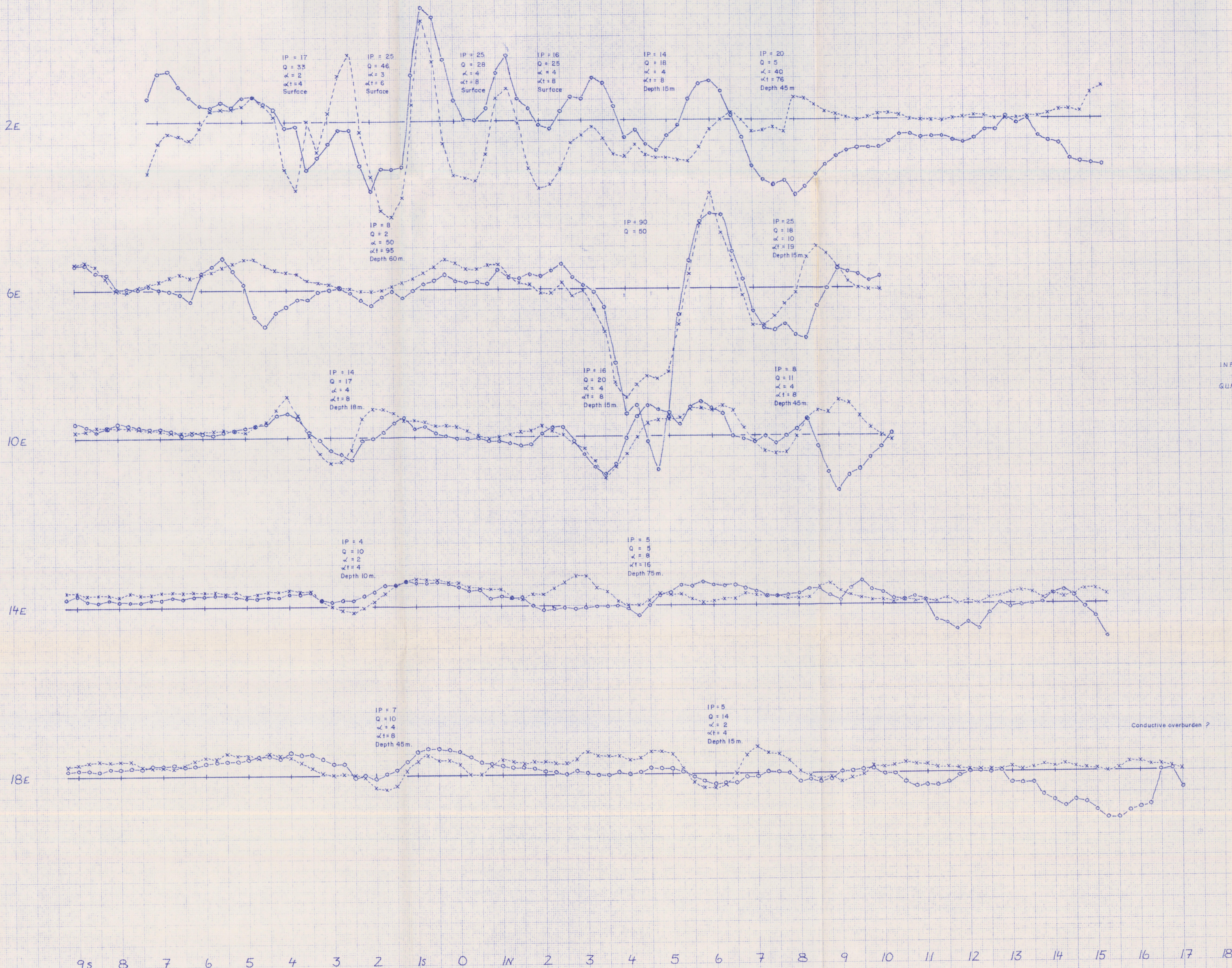
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PHASE 1cm = 10%

GERMAN CREEK

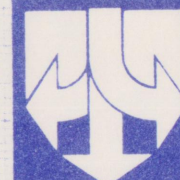
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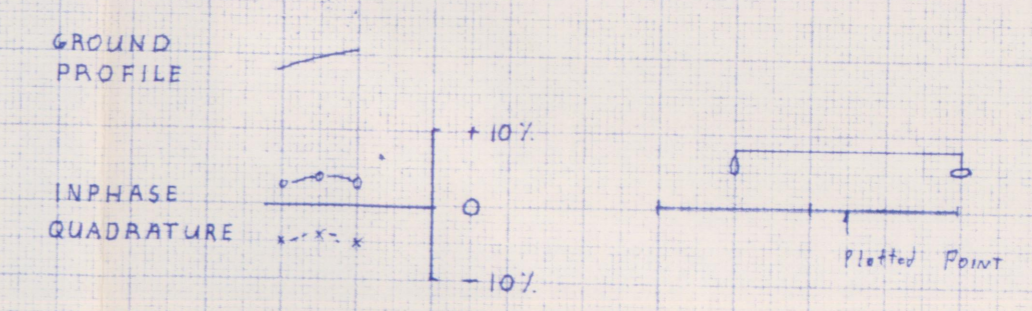
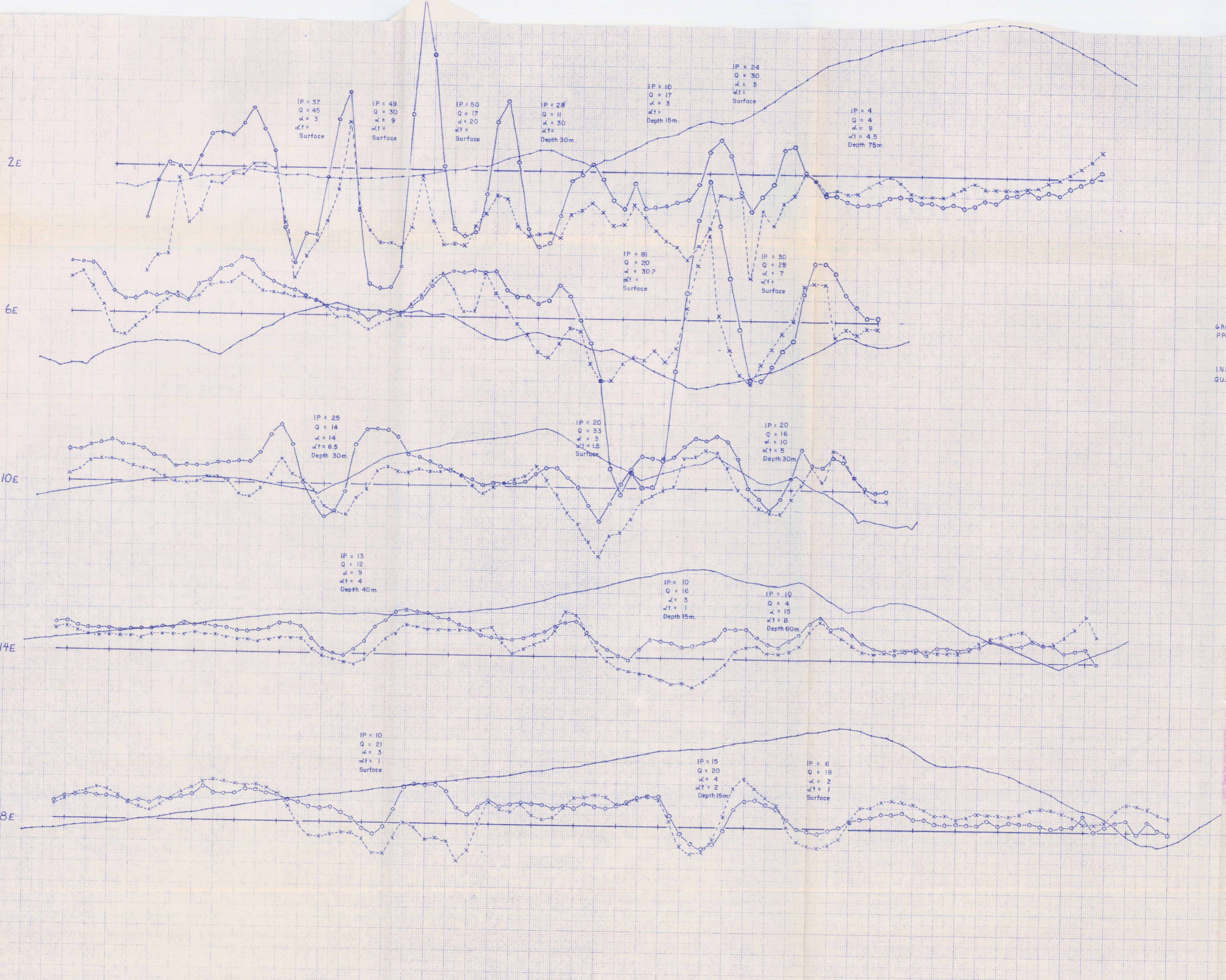
MAX MIN # 556

SURVEY BY JK KM PLOTTED BY KM JK  
DATE 07/79



444 Hz

	SURVEYED & COMPILED BY		FOR
	<b>geoterrax</b>		<b>ANACONDA</b>
		CANADA EXPLORATIONS	
HEM SURVEY, YUKON		090551	
Scales: HORIZONTAL 1cm = 50M		GERMAN CREEK	
PHASE 1cm = 10%			
Instruments:			
MAX MIN II # 556			
SURVEY BY KM JK		PLOTTED BY KM JK	
DATE 07/79		GEOTERRAX FORM 1 No. 85	



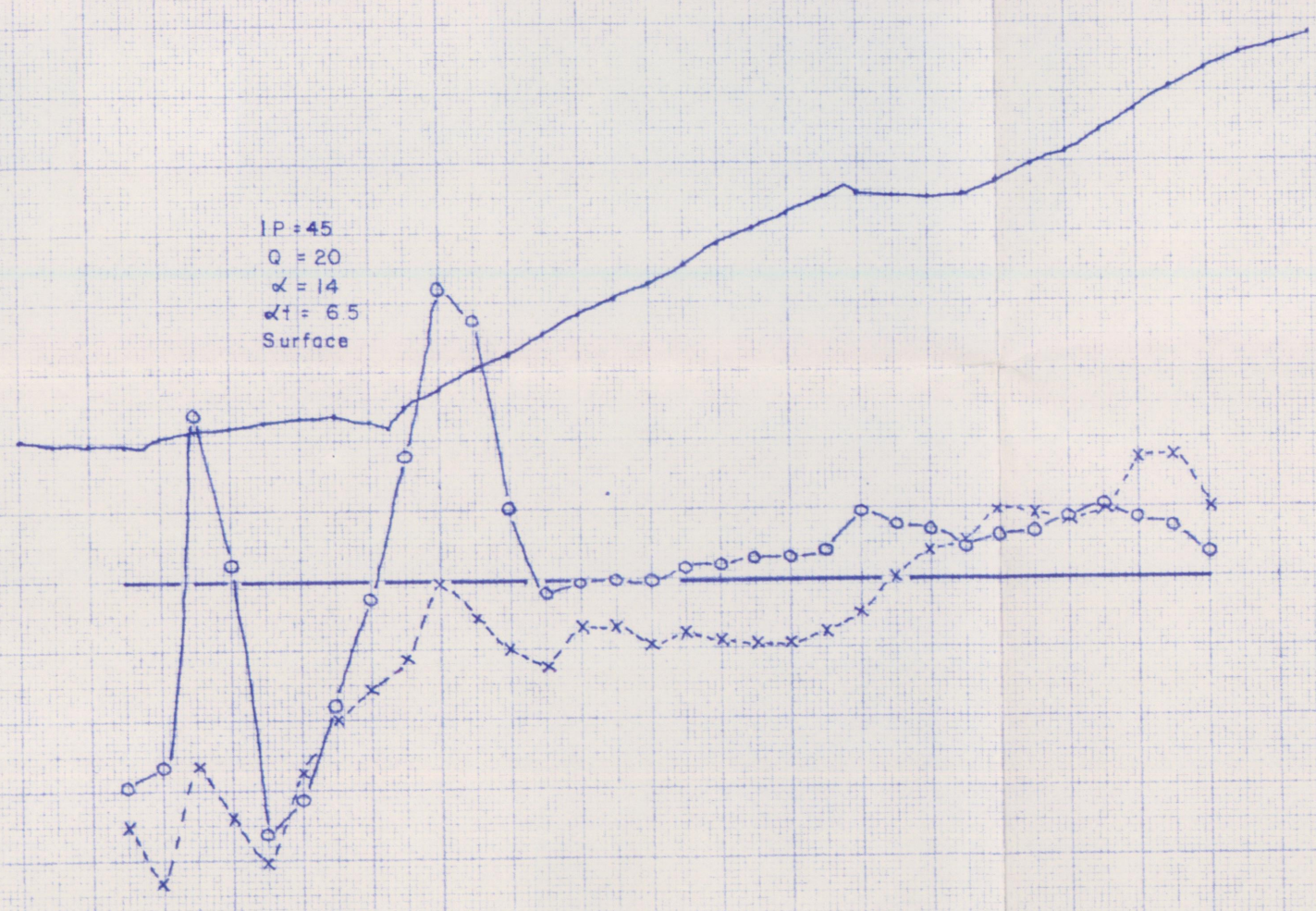
150 m CABLE SPACING

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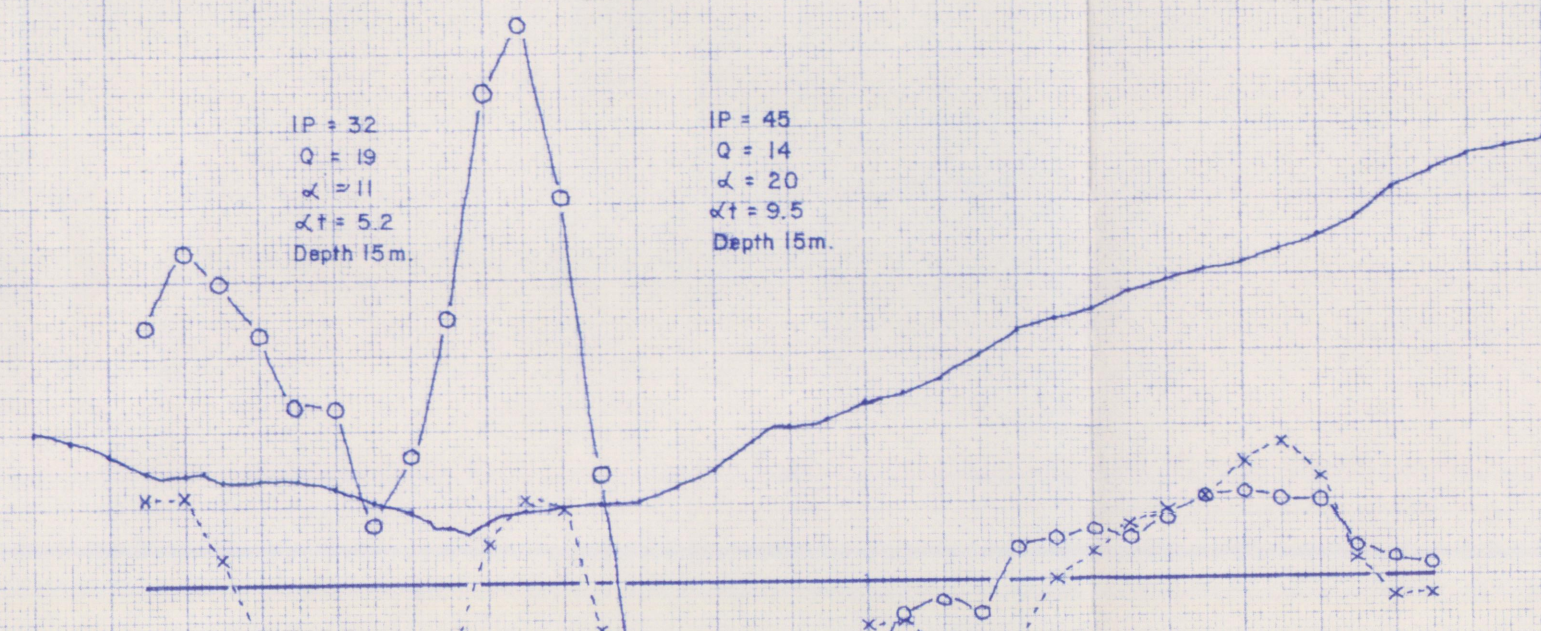
1777 Hz

	SURVEYED & COMPILED BY <b>geoterrex</b>	FOR <b>ANACONDA</b> CANADA EXPLORATIONS
	HEM SURVEY	YUKON 090551
Scales: HORIZONTAL 1cm = 50M VERTICAL 1cm = 50M PHASE 1cm = 10%		<b>GERMAN</b> <b>CREEK</b>
Instruments: MAX MIN II #556		SURVEY BY JK KM DATE 07/77 PLOTTED BY JK KM GEOTERRIX PROJECT NO. 85-84

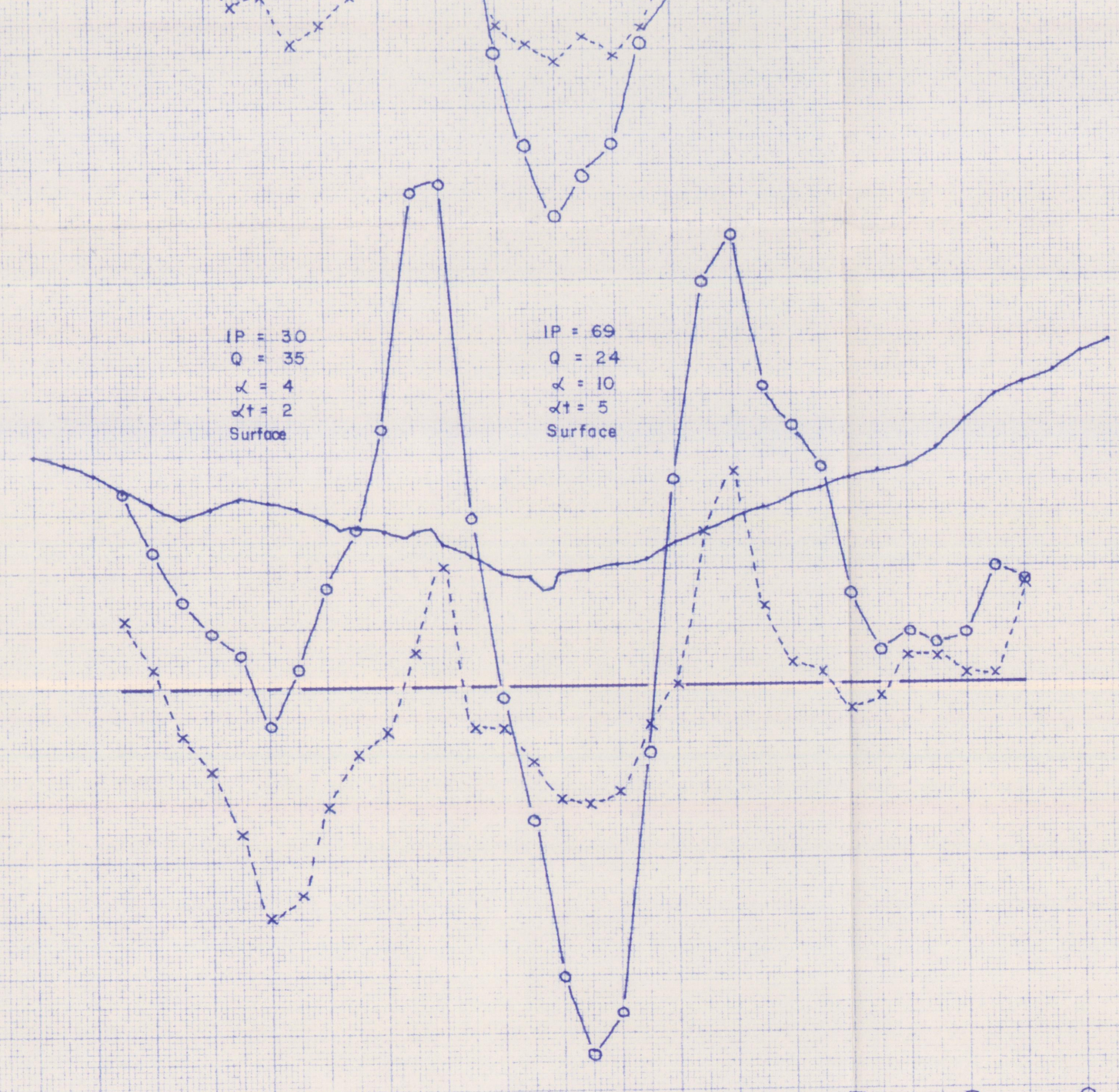
3E



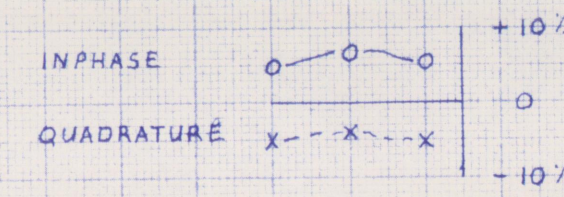
4E



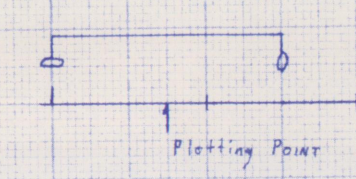
5E



GROUND PROFILE

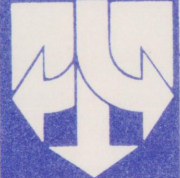


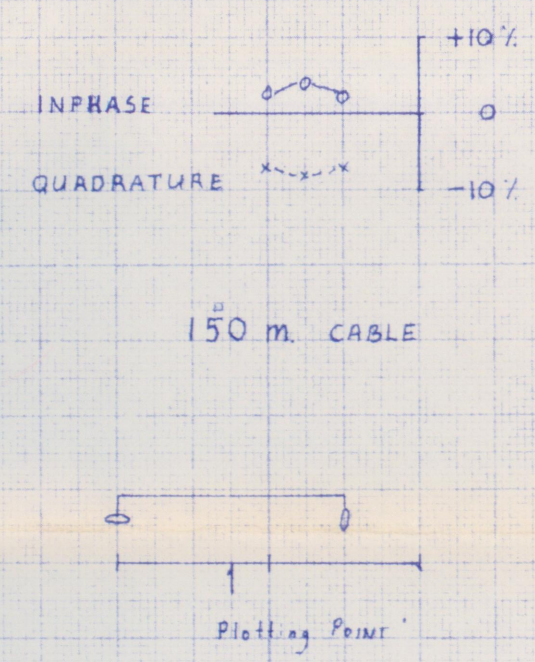
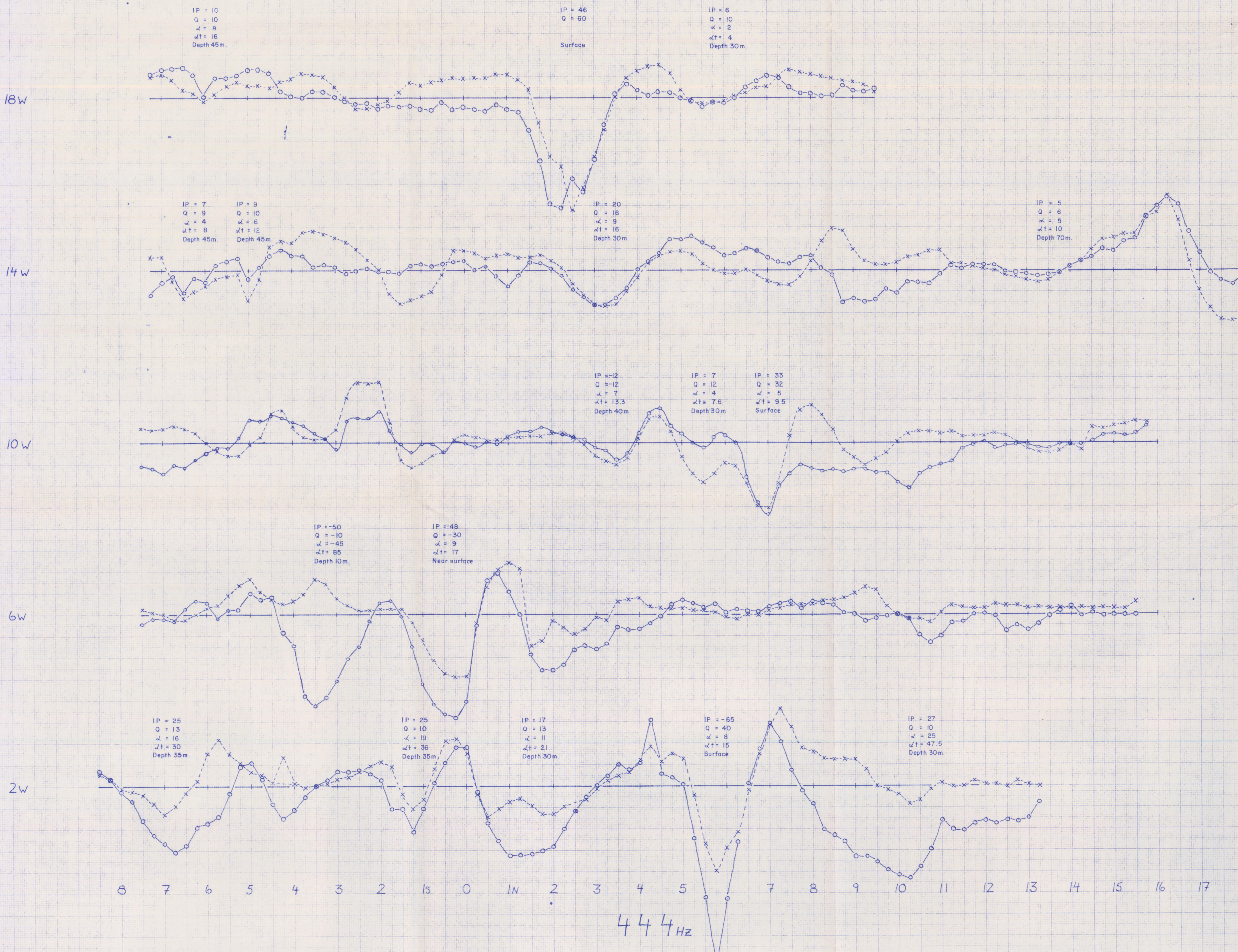
150 m. CABLE



0 1N 2 3 4 5 6 7 8 9 10

1777 Hz

	SURVEYED & COMPILED BY		FOR	
	<b>geoterrex</b>		ANACONDA	
				CANADA EXPLORATIONS
HEM SURVEY		YUKON		090551
Scales: HORIZONTAL 1cm 50m		GERMAN CREEK		
VERTICAL 1cm 50m				
PHASE 1cm 10%				
Instruments:		SURVEY BY JK KM PLOTTED BY KM JK		
MAX MIN II # 556		DATE 07/79 GEOTERREX PROJECT NO 85		



SURVEYED & COMPILED BY		FOR	
<b>geoterrex</b>		ANACONDA	
HEM SURVEY		YUKON 090551	
CANADA EXPLORATIONS		GERMAN CREEK	
Scales:		HORIZONTAL 1cm = 50M	
		PHASE 1cm = 10%	
Instruments:		MAX MIN II # 556	
SURVEY BY KM JK		PLOTTED BY JK KM	
DATE 07/77		GEOTERREX PROC. 1.3.0 05/84	