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WATSON LAKE, Y.T.
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PROGRESS REPORT

on the

HENCH CLAIMS
(1979 Programme)

Covering: Line Cutting, Geophysics, Geochemistry

JAN 14 1980
INSPECTORS OFFICE
WHITEHORSE, Y.T.

WATSON LAKE MINING DISTRICT
NTS 105-J-3/SW
Latitude 62^{o} 02'
Longitude 131^{o} 22'

Owner & Operator: St. Joseph Explorations Ltd.

Report by: D.A.R. Hendry, P. Eng.

December 20, 1979

Includes: Geophysical Report by James L. Wright
October, 1979
Covering Field Work Completed July 21-26, 1979

090526

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

Representation

$ 17400

A.R. Geologist

Resident Geologist or
Resident Mining Engineer

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

B. R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory

ASSESSMENT REPORTS

Watson Lake M.D.

~~95D-5~~

MAP No. 105 J3 **TYPE OF WORK:** Geophysical Report

REPORT FILED UNDER	St. Joseph Explorations Ltd. 090526
DATE PERFORMED	December 20'79 **DATE FILED:** 10 January'80
LOCATION – LAT.	62°02'N
LONG.	131°22'W
CLAIM Nos.	HENCH 1-48
	YA34550-97
WORK DONE BY	D.AR. Hendry, P.Eng.
WORK DONE FOR	St. Joseph Explorations Ltd.
REMARKS	The Hench 1-48 claims were recorded in August, 1978. They are underlain by Paleozoic meta-sedimentary rocks and Cretaceous granitic rocks. Mineralization consists of sphalerite, galena and minor chalcopyrite in quartz veinlets. Previous work consisted of prospecting, geological surveys.

090526

STAR PRINTING, WHITEHORSE

already had report on microfilm N.T.S. apparently wrong. Checked index, update and last two batch no index sheets. Will have to wait until Oct up-date comes back. If indexing not done I will do it from microfilm Paulette T. Marion 81/11/19

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ILLUSTRATIONS

INTRODUCTION AND SUMMARY

The forty-eight Hench claims were staked July 11, 1978 to cover lead, zinc, copper and silver vein mineralization and anomalous silt samples located 60 km east of Ross River (figure 1).

Geological units comprise Lower Paleozoic sediments and metasediments of the Selwyn Basin, primarily phyllite and banded pelitic schists. These are intruded by a large felsic pluton and mafic dykes and capped in the south by allochthonous mafic extrusive klippen remnants.

Geochemical and geological surveys were conducted on the claims in August 1978 and July 1979. Present sampling is at 50 m on 400 m lines over all the property with 50 m samples on 200 m spaced intermediate lines over anomalies. All samples have been run for lead and zinc, with selected areas also for copper, silver and iron. Line cutting in 1979 totalled 30 km over which, in June 1979, very low frequency electromagnetic, horizontal loop electromagnetic and magnetometer surveys were conducted with anomalies tested by induced polarization surveys.

CONCLUSIONS AND RECOMMENDATIONS

Geochemical profiles over known vein mineralization have shown ambiguous results and combined with swamps covering much of the property have made interpretations difficult. The largest geochemical anomaly is at least 600 m long (cut off by a lake on the west end) and varies between one sample and five samples wide (125 m). It roughly parallels a coincident HLEM anomaly (HLEM - C) which covers a strike length of in excess of 2800 m and a width of 80 to 250 m showing as banded material of variable chargeabilities. This unit is probably graphitic shale. Combined with its geochem values it could well represent formational sulfides interbedded with the graphitic material, a most interesting environment in light of the lithologies of the Howards Pass deposit. This is considered of first priority in the next phase of follow-up.

Anomaly HELM - A, 400 m long and 25 m wide, is anomalous in lead and silver soil geochem. It lies in banded pelitic schist unit which has been shown to possess copper, lead, zinc and silver in a float showing on the location line for claim 8 & 9. It should be followed-up.

Anomaly HLEM - B is considered to be more likely mineralization than graphite because of its low chargeabilities. It is along strike from mineralized veins on the base line 66E but it does not itself have a geochem anomaly. It is thus for the time being given a lower priority than HLEM - A & C.

HLEM - D & E are possibly outliers of HLEM - C and their status will be determined by results of drilling on HLEM - C.

VLF - D represents a broad or deep anomaly which does not have a geochem anomaly. It is not considered for follow-up work at this time.

The magnetometer survey has shown no correlation with HLEM and VLF anomalies but the mag pattern probably represents two lithologic elements and can be used as a mapping tool.

Recommendations for the next phase of work are as follows:-

1. Drilling should commence in 1980 on conductor HLEM - C and A.
2. Drilling should entail two holes approximately 200 m each on anomaly HLEM - C and one on anomaly HLEM - A (200 m).

3. Drilling should be in spring with a light drill capable of 300 m depth. The camp support and drill moves should be accomplished with the Huges 500D based in Ross River.

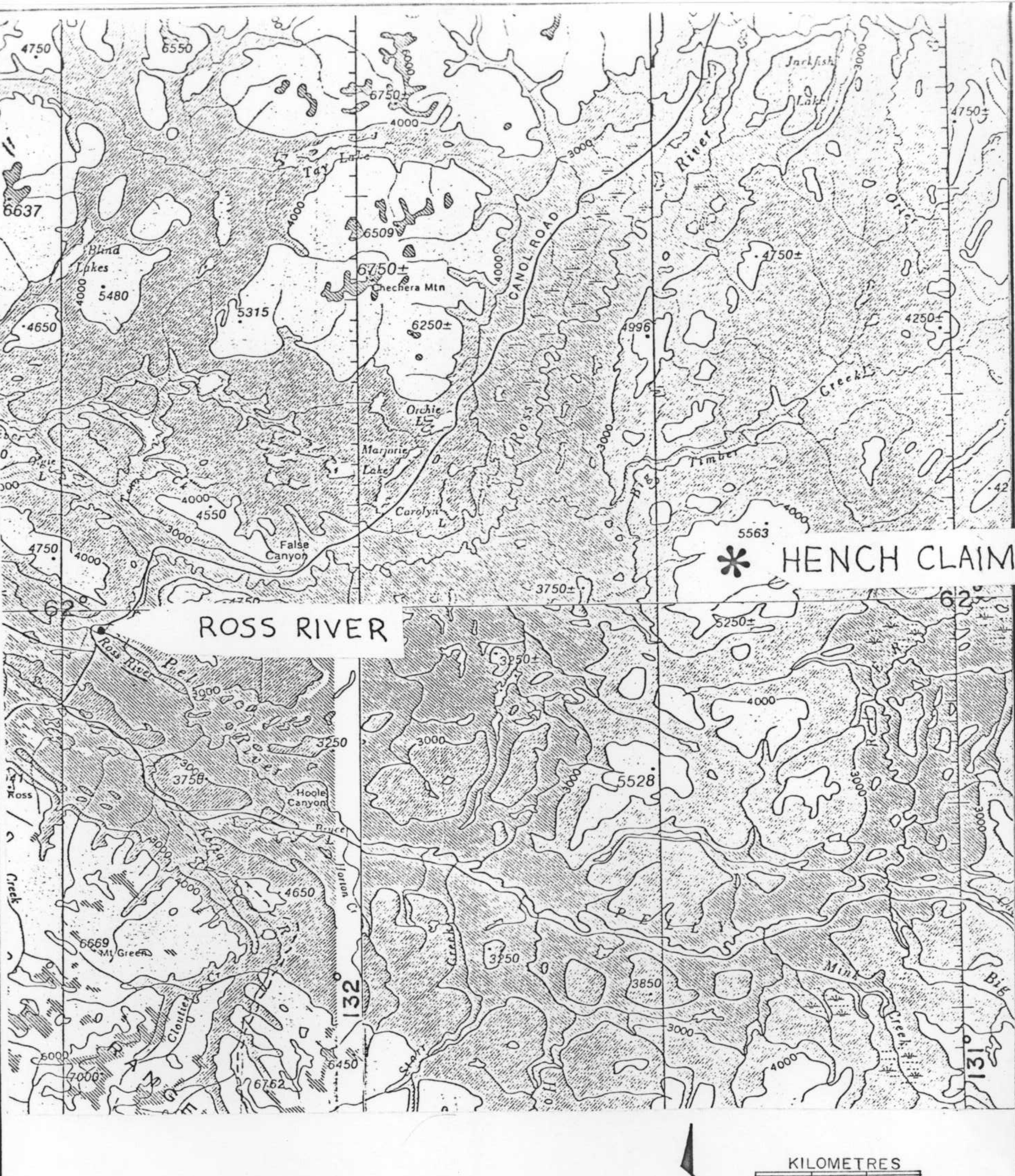
4. This program will cost $60,000 based on 600 m at $98.50 per metre ($30.00/foot). It will require one geologist and one camp assistant for about 3 weeks in the field.

Respecfully submitted,

David Hendry

David Hendry, P. Eng.
St. Joseph Explorations Ltd.

PROFESSIONAL
PROVINCE
OF
DAVID A.
BRITISH
COLUMBIA
ENGINEER



APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. 61 ° 35 ' ___ " LATITUDE 131 ° 00 ' ___ " LONGITUDE	PROJECT NO. 6261.2 FIGURE NO. 1	SHEET NO. ___ OF ___ N.T.S. 105-J-3	HENCH CLAIMS YUKON
ST. JOSEPH EXPLORATIONS LIMITED TORONTO, CANADA			LOCATION MAP SCALE 1:500,000

LOCATION AND ACCESS

The Hench claims lie 60 km east of Ross River, Yukon. Access to the claims is gained most conveniently by helicopter from Ross River. Two large rivers, the Pelly and the Ross Rivers separate the claims from the Robert Campbell Highway and the Canol Road, to the south and west respectively. A lake suitable for float plane traffic is located 7 km south of the claims.

PHYSIOGRAPHY

The claims lie on the Pelly Plateau (Bostock, 1948) between the valleys of the Pelly and Ross Rivers and south of Big Timber Creek. Relief is gentle on the claims with elevations ranging between 1300 m and 1400 m. The plateau drops 350 m to the Ross and Pelly River valleys. Both south and northeast of the claims, isolated mountains rising 450 m above the plateau, dominate the landscape.

The entire plateau was covered by Pleistocene ice, moving generally westward. Drainage on the claims which are located in a broad, gentle saddle, is very poor with much of the claims underlain by wet "nigger-head" swamps. Glacial till where it is dissected appears to be less than 8 m thick, but may be thicker in paleo-depressions. A strong boulder train trends east-west across the northern portion of the claims.

The claims are located slightly below treeline which is at 1400 m. Between swampy areas stunted spruce, willow, alder and black birch vegetation is quite thick.

Outcrops occur only along one gentle creek valley and on the lower slopes of the two mountains. Soils on the property are primarily developed from glacial till. A post glacial layer of volcanic ash appears intermittently in samples and is generally less than 3 cm thick.

CLAIMS, OWNERSHIP, AND EXPIRY DATE

Grant number, names and expiry dates for the Hench claims are summarized below (providing work filed in July 1979 is accepted):-

GRANT NO.	NAME	EXPIRY DATE
YA34550-97	Hench 1-48	August 3, 1984

The 48 Hench claims form a contiguous block. They are owned and operated by St. Joseph Explorations Ltd.

HISTORY

The claims were staked on July 11, 1978. During August 1978 soil samples, totalling 390 samples, were collected at 50 m intervals on chained and flagged lines 400 m apart. Samples were analysed for copper, lead, zinc, iron and selected samples were analysed for silver. This data together with geologic data gathered simultaneously is reported in an assessment report, by D.A.R. Hendry, dated May 30, 1979. No previous or recent competitor activity is evident in the area.

1979 PROGRAMME

During May 18 - 20 and June 6 - 15, 1979 a 3.6 km baseline and cross lines at 200 m intervals totalling 26.6 km were cut by C.R. Eastman of Whitehorse.

During June 12 - 30, 1979, magnetometer, horizontal loop max-min EM and VLF surveys were conducted over the grid lines. An IP survey was conducted over selected anomalies. The geophysical results, treated in a separate report by J.L. Wright, dated October, 1979, are included herein as the geophysics chapter.

During July 21 & 23 - 26, 1979, this author and an assistant examined the VLF and Max-Min targets from preliminary maps. Deep soil samples at a spacing of 25 m were collected across the strongest anomalies. All samples were taken from 40 - 70 cm deep pits. Several rock samples were also taken from the bottom of each pit. Hand-dug trenches, 1 to 1.2 m deep and 1 - 2 m long were dug at the surface projected trace of four of the strongest VLF anomalies. Profile soil samples and a small bag of rock fragments were taken in each trench.

All soil samples were analysed for lead, zinc and silver.

GEOLOGIC SETTING

The claims lie within the Selwyn Basin tectonic province (Gabrielse 1967). Sediments ranging from Cambro-Ordovician to Devonian attest to two depositional cycles. Older sediments are fine grained, deeper water carbonates, mudstones and phyllite. Those deposited during and after uplift of the Sheldon Arch, in the Silurian, are higher energy, shallow water conglomerates, sandstones, quartzites, shales and limestones.

A large felsic intrusive, possibly of Cretaceous age, north of the property has altered nearby sediments to pelites, phyllites, calc-silicate schist and biotite schist. Diorite dykes also intrude these sediments and metasediments.

South of the claims a large extrusive dioritic and basaltic mass of Tertiary or Quaternary Age (Templeman-Kluit, 1977) has been thrust from the south onto Devonian sediments.

The less than one percent outcrop precludes a stratigraphic discussion. A table of formation from the property and regional geology follows.

TABLE I

Table of Formations

PERIOD	GSC* MAP UNIT	PROPERTY± MAP UNIT	LITHOLOGY & MAP SYMBOL WHERE APPROPRIATE
Quaternary or Tertiary	QTvb	Allochthonous Mafic Rocks	diorite; porphyritic and columnar jointed hornblende, plagioclase porphyry.
	?	Mafic Intrusive	2. diorite; fine grained, dark green 2a. altered diorite, calcareous pale green diorite.
Cretaceous	Kqm	Felsic Intrusives	quartz monzonite; also porphyritic quartz monzonite & feldspar porphyry. 1. quartz feldspar porphyry; very coarse grained, blocky green weathering.
Devonian & Silurian	uDMfcg	Conglomerate	chert pebble conglomerate; black & grey chert pebbles in arkosic matrix. Also arkose & mudstone & slate interbeds.
Devonian, Silurian & Ordovician	OSDqc	Phyllite	3. phyllite; calcareous light grey. Quartz and rusty carbonate veining.
		Schist	4. schist; pelitic and micaceous, muscovite, chlorite, chloritoid schist, dark and variably rusty weathering, strong structural grain.

* Templeman-Kluit, 1977, Geol. Surv. Can., Open File 486

± Accompanying geology map, Map No. 2, pocket No. 2

MINERALIZATION

Sphalerite and galena in quartz veins, sometimes containing chalcopyrite, have been found cutting calcareous phyllite, altered porphyritic diorite and calc-silicate schist. Only two occurrences are in outcrop and they have different orientations. At present all veins found are very thin, less than 15 cm, and of high grade (table below).

TABLE II
Table of Assays

Sample No.	Cu %	Pb %	Zn %	Ag oz.	Description
R 2104	0.06	18.8	14.8	2.36	15 cm high grade sphalerite and galene vein.
R 2205	0.33	4.60	3.10	4.60	Sphalerite-galena veins in calc-silicate chip sample of float.
HR2220	$<$0.01	0.22	1.18	Tr	13 cm high grade sphalerite and galena vein sampled across 1.2 m of outcrop.
HR2221	0.12	0.44	2.13	4.71	Same vein as HR2220. Sampled across 30 cm of outcrop.

STRUCTURE

Structural interpretations from the limited outcrops on the property are not possible. The pelites and schists in the northeast corner of the claims and forming the boulder train across the north of the claims, show tight intra-layer folding and growth of chlorite, muscovite and biotite parallel with axial planes. Orientations in the calcareous phyllite are variable because of folding and again too few to permit interpretations. Contacts of the dioritic intrusions are not exposed and it cannot be interpreted whether they are dykes or sills.

GEOPHYSICS

The following is a report by James L. Wright, St. Joseph Explorations Limited, Toronto, dated October, 1979.

Introduction

During the summer of 1979 several geophysical surveys were conducted upon the Hench Property (Project #6261.2) in the south central region of the Yukon Territory. These included a Very Low Frequency (VLF) Electromagnetic Survey, Horizontal Loop (HLEM) Electromagnetic Survey (two freqency), Magnetic Survey, and Inducted Polarization (I.P.) Survey. The logistical details, methodology, and interpretive results of the aforementioned surveys will be discussed in the following.

The area is one felt to be favorable for base metal mineralization of the shale hosted or vein/skarn types. Electromagnetically these types of deposits can be quite anomalous, thus prompting the use of both the HLEM and VLF methods. Combination of the two allows a substantial frequency spread and variable conductor evaluation. The magnetics were employed primarily as a mapping tool but can also indicate magnetic correlation with anomalies generated by other methods. Induced Polarization detects both massive and disseminated sulfides and as such was used primarily as a screening tool. Applications included evaluation of VLF conductors, geochemical anomalies, and geometrical relationships of various HLEM conductors.

In the following all grid locations will be given as if the baseline were zero.

Logistical Detail:

Outlined below are pertinent logistical data.

Survey Dates:	June 13 - 30, 1979
Personnel:	J.L.Wright, D.M.Windsor, T.W.Ebbern, J.Bilins]
Instrumentation:	HLEM: Apex Parametrics Max-Min II
	VLF: Geonics EM-16
	Magnetic: Geometrics GM-122 Scintrex MBS-2 Base Station
	I.P.: Huntec MK-4 Receiver Phoenix IPT-1 Transmitter
Production:	HLEM: 26.6 line-km Magnetics: 26.6 line-km VLF: 26.6 line-km I.P.: Four Dipole-Dipole set-ups

Access to the property was via Terra Air Helicopters Ltd., Ross River, Yukon Territory. Data sheets and original field notes are stored at the Toronto office of St.Joseph Explorations Limited.

Survey Methodology:

This is discussed separately for each survey in the following:

HLEM Survey: Survey parameters are as follows:

Frequency:	888 Hz & 3555 Hz
Coil Separation:	100m; 25m (detailing)
Reading Interval:	25m/100m cable; 6.25m/25m cable
Parameters Read:	Percentage of In-phase & Out-of-phase component of secondary field

These data are plotted in profile form with a scale of 1cm = 20% on a base map of scale 1:5000. The 25m detailing done upon portions of L68E and L78E is plotted in profile form at a scale of 1 cm = 5% and presented upon a separate sheet at a scale of 1:1250. Two sets of the above described maps are present. One for each frequency, 888 Hz and 3555 Hz.

VLF Survey: Survey parameters are as follows:

Frequency:	17.8 KHz
Transmitter Station:	Cutler, Maine, U.S.A.
Reading Interval:	25m
Parameters Read:	Dip of Total Field

These data are plotted in profile form with a scale of 1cm = 20^{o} on a base map of scale 1:5000. In addition, the data was processed with the well known Fraser Filter and plotted on a base map of scale 1:5000. The data was then contoured at an interval of 10 units.

Magnetic Survey: Survey parameters are as follows:

Base Station Location:	L7600E, 8250N
Base Station Value:	500 gammas
Datum Subtracted:	58000 gammas
Reading Interval:	25m
Parameters Read:	Total Magnetic Field

These data are plotted upon a base map at a scale of 1:5000 and contoured with an interval of $100\gamma \leq 1000\gamma$ and $500\gamma \geq 1000\gamma$. Dirunal control was provided by a strip chart recorder monitoring the earth's field every minute. Diurnal variation was removed by subtraction to the base value of 500γ.

I.P. Survey: Survey parameters are as follows:

Array:	Dipole-Dipole; a = 25m; n = ½, 1-5
Set-up Locations:	L68E, 7875N; L70E, 7950N; L78E, 8000N; L80E, 7600N
Parameters Read:	Chargeability (msec.) Resistivity (ohm-m)

These data are plotted on a standard pseudo-section format and contoured logarithmically for resistivity and linearly at an interval of 10 msec. for the chargeabilities.

Interpretation:

Results are discussed on a survey basis in the following:

HLEM Survey:

Five favourable electromagnetic conductors are noted in the data. Two are of fairly short strike length and marginal conductivity, while the third is quite large and fairly conductive. The remaining two are poorly defined along strike but of moderate conductivity. Several presumed swamp and/or overburden responses are also noted and locations given below.

Location	Comment
L62E, 25N	Creek Bottom
L64E, 25N	Creek Bottom
L66E, 60N	Creek Bottom
L72E, 150N	Swamp
L74E, 150N	Swamp
L80E, 125N	Swamp
L80E, 275S	Swamp
L82E, 75N	Swamp
L84E, 1075N	Overburden
L86E, 75N	Swamp
L88E, O.B.L.	Swamp
L88E, 650S	Swamp
L90E, 575S	Swamp
L92E, 50S	Swamp
L94E, 150S	Swamp
L98E, 550N	Swamp

All of the above are poor conductors and would be considered of very low priority unless other collaborating data would suggest otherwise. The remaining more favourable conductors are designated A - E and discussed in the following.

Conductor A:

Details regarding the conductor's location, physical description and electrical properties follow.

Line Locations:	L94E, 350N; L96E, 295N
Strike:	S80E
Strike Length:	400m
Width:	<25m
Dip:	Undetermined
Depth:	Shallow

Conductivity-Width Product: Very low (poor conductor)

In-phase/Out-of-phase Ratio: 0/3555 Hz & 0/888 Hz

This anomaly could be a swamp or overburden response but correlation with known topography does not suggest this. It may well represent a marginally conductive mineralized zone.

Conductor B:

Details regarding the conductor's location, physical description and electrical properties follow.

Line Locations:	L76E, 10N; L78E, O.B.L.
Strike:	East-West
Strike Length:	400m
Width:	<25m
Dip:	Undetermined
Depth:	Shallow
Conductivity-Width Product:	0.18 mho
In-phase/Out-of-phase Ratio:	0.10/3555Hz & 0/888Hz

The anomaly is a marginal conductor being only slightly more conductive than conductor A but still quite poor. However stratigraphy which is hopefully indicated by Conductor C, which will be discussed shortly, indicates it may well lie roughly on strike with the known lead-zinc showing in the vicinity of L66E, O.B.L. In addition, I.P. results to be discussed later indicate chargeable materials to be associated with the conductor.

Conductor C:

Details regarding the conductor's location, physical description, and electrical properties follow.

Line Locations:	L62E, 300-430S; L64E, 170-420S; L66E, 170-340S; L68E, 190-270S; L70E, 120S-Open; L72E, 100S-Open; L74E, 80S-Open; L76E, 190-420S; L78E, 290-510S; L80E, 450-600S; L82E, 425-825S; L84E, 775S-Open; L86E, 820S-Open; L88E, 840S-Open; L90E, 870S-Open
Strike:	East-West/L62E-L76E & S70E/L76E-Easterly
Strike Length:	2800m (open to east & west)
Width:	Min: 80m; Max: 250m; Average: 200m
Dip:	45^{o}S/L62E-L72E; 60^{o}S/L74E-L78E; 45^{o}S/L80E-L90E
Depth:	Shallow
Conductivity:	Max: .356mho/m; Min: .128mho/m; Average: .242 mho/m
In-phase/Out-of-phase Ratio:	Max: 2.5; Min: 0.50; Average: 1.5

The anomaly while being quite large in physical dimensions does not have an unusually high conductivity. It is rated as a moderately good conductor. The structure within the anomaly indicates an interlayering of beds with alternating conductivities. In a general sense it seems to indicate a grading from high to low conductivities from north to south. Dips are somewhat harder to determine. Lack of coverage and overlapping effects from adjacent anomalies confuse the picture. However type curves indicate that a dip of 45° southerly in the vicinity of L62E-L72E and steepening to perhaps 60° southerly L74E-L78E and again flattening to 45° southerly for L80E-L90E would be in order. It should be noted that conductivities were determined for a homogeneous earth model using 100m cable data from some of the thicker portions of the conductor. In addition a tight fold or fault seems to have displaced the conductor in a right lateral sense between L82E and L84E. Total displacement is on the order of 300m.

Conductor D:

Details regarding the conductors location, physical description and electrical properties follow.

Line Locations:	L76E, 575S
Strike:	Undetermined (presumed S70E)
Strike Length:	Undetermined (open to west)
Width:	25m
Dip:	Undetermined (presumed 60°S)
Depth:	Shallow
Conductivity:	.029 mho/m
In-phase/Out-of-phase Ratio:	0.5

This conductor is of fairly poor conductivity and badly deformed due to distortion by adjacent anomalies. Dip and strike were inferred from data known of anomaly C. It most probably represents an outlier of material similar to that in anomaly C.

Conductor E:

Details regarding the conductors location, physical description and electrical properties follow.

Line Locations:	L76E, 760S
Strike:	Undetermined (presumed S70E)
Strike Length:	Undetermined (open to west)
Width:	<25m
Dip:	Undertermined (presumed 60°S)

Depth: Shallow

Conductivity-Width Product: 0.181 (approx.)

In-phase/Out-of-phase Ratio: 0.33

The conductor is quite poor conductively speaking and, again, badly deformed by adjacent anomalies. What was said of anomaly D applies equally well to this one.

VLF Survey:

Four prominent VLF anomalies are noted and discussed separately in the following. In addition, many other fainter anomalies thought to be of swamp and/or overburden origin can be noted. However these will not be listed.

Conductor A:

This appears to correspond to conductor A noted in the HLEM results. Line locations are L92E, 375N; L94E, 360N; L96E, 275N; and L98E, 150N. This yields a strike of S70E and strike length of 700m, open to the east. Its prominence among VLF anomalies relative to the HLEM results attests to its very poor conductivity.

Conductor B:

This seems to correspond to conductor B noted in the HLEM results. Line locations are L74E, 15S; L76E, O.B.L.; L78E, O.B.L.; and L80E, 15N. A possible extension to L82E, 65N is noted but seems to contradict known or presumed strikes. In addition, the response on L82E is felt to be related to a swamp in the area. This yields a strike of roughly east-west and strike length of 700m. As with conductor A a healthy VLF response relative to a weak HLEM attests to the zones very poor conductivity.

Conductor C:

This seems to correspond to conductor C noted in the HLEM results. The total anomaly response is quite complex consisting of several branches and isolated anomalies. The broken-up nature is a result of contouring bias, poor transmitter-conductor coupling, lack of overburden penetration, and superimposed swamp responses. Nevertheless the locations are as follows.

L62E; 220S	L78E; 300S
L64E; 100S & 250S	L80E; 310S
L66E; 90S, 160S & 250S	L82E: 410S & 785S
L68E; 15S & 210S	L84E; 760S
L70E; 60S	L86E; 790S
L72E; 130S	L88E; 830S
	L90E; 980S

In this case strike and strike length are better inferred from the HLEM results for conductor C.

Conductor D:

This, contrary to the foregoing, does not correspond to HLEM conductor D nor any HLEM anomaly. Line locations are L62E, 300N; L64E, 250N; L66E, 325N; and L68E, 260N. Strike is roughly east-west and with a strike length of 700m open to west. The broader nature of the response indicates either a deeper or broader source. A rough magnetic correlation is also noted.

Magnetic Survey:

Total magnetic relief over the property is fairly modest ranging about 1000 gammas. The magnetic texture is quite unique in that two distinct areas are found. The first covering the southern portion of the grid shows a very flat magnetic relief of about 100 gammas. Northerly of this is a bubble pattern of modest relief ranging to about 1000 gammas. The boundary of the two zones is outlined below.

L76E, 330N	L90E, 250N (approx.)
L78E, 250N	L92E, 100N (approx.)
L80E, 200N	L94E, O.B.L.
L82E, 210N	L96E, 50S
L84E, 170N	L98E, 50S
L86E, 100N (approx.)	
L88E, 150N (approx.)	

This quite probably represents the contact between two rock units. It is interesting to note that the contact inferred from the magnetics quite closely tracks the northern boundary of the swamp and stream traversing the central portion of the property. This swamp could be a physiographic expression of the contact. None of the HLEM anomalies show any magnetic correlation and only the one VLF anomaly, conductor D, shows a magnetic correlation.

I.P. Survey:

Four dipole-dipole set-ups were done to test several areas. These are listed below:

Center	Comment
L68E, 125S	Test HLEM & VLF Conductor C
L70E, 50S	Test HLEM & VLF Conductor C
L78E, O.B.L.	Test HLEM & VLF Conductor B
L80E, 400S	Test Geochemical Anomaly

Each set-up is discussed separately below.

L68E: Two distinct chargeability anomalies are noted at 50S to at least O.B.L. and 200S. The one at 200S has a very low resistivity zone associated. Values as low as 2 ohm-m are present. Interpretation is a bit difficult as it appears as if the overburden thickens at 125S, thus disrupting the anomaly patterns. Chargeability values are quite high reaching in excess of 150 msec. It should be noted the anomaly from O.B.L.-50S also has a resistivity association but less intense.

L70E: Again a dual source is indicated with anomalies at 40S and 125S. A strong resistivity correlation with each is noted. Indeed, resistivity values plunge to less than 1 ohm-m. No significant overburden is indicated. Chargeability values exceed the 70 msec. level.

L78E: A classic, well formed anomaly is located at 25N. This is much weaker than those noted on L68E and L70E. Chargeability values range into the 50 msec area. Also associated is a textbook resistivity anomaly. It indicates a low resistivity dike like body. Values are, again, less impressive than those associated with anomalies on L68E and L70E. Resistivities on the order of 250 ohm-m are noted. Background resistivities appear to be in the 1500 ohm-m range.

L80E: A fairly clear anomaly is noted at 400S. Chargeabilities on the order of 70 msec can be found. However, no clear resistivity correlation is present. Overburden thickening to the south is indicated and may well be distorting the chargeability data. An extremely low resistivity zone lies in the neighborhood of 475S and is likely related to HLEM anomaly C.

Conclusions and Recommendations:

The results discussed in the foregoing indicate possibly three drill targets. Listed in order of decreasing geophysical priority these are:

a) HLEM C

b) HLEM B

c) HLEM A

Available data would suggest HLEM anomaly C is of formational character and most probably a graphitic shale unit. No pyrrhotite or magnetite is present. Substantial volumes of material are involved and of a banded or layered nature within the conductor.

HLEM anomaly B is of apparently different origin to that of anomaly C. The relatively modest chargeabilities and resistivity correlation suggest we may be dealing with either a mineralized shear or more likely a strata bound type of mineralization. This does not rule out a graphitic origin but the low conductivity and general nature of the results make one feel as if sulfides are the origin. As with anomaly C no magnetic material is present or indicated.

HLEM anomaly A is akin to anomaly B but I.P. data is not available for further assessment. In addition, the magnetics suggest the anomaly lies in a fundamentally different rock unit to that of anomalies B and C.

Exact drill locations can be reviewed later with the input of further data such as geochemical, geological, or drill logistics. Geophysically, the property seems to have had a fairly comprehensive first pass. If drill results indicate, extension of available coverage along strike may be warranted.

James L. Wright

JLW*MS

James L. Wright

GEOCHEMISTRY

An attempt was made to sample residual C horizon soils at each site. Where this could not be achieved, a sample was taken at approximately 60 cm deep.

Soils encountered in this survey comprise four types as follows:-

1. Residual C soils, consisting of grey phyllite or black shale regolith and soil occur usually on higher well drained hummocks and are covered with moss, thin organics and variable thickness of brown glacial till.
2. Glacial till, consisting of brown and rusty brown soil and rounded polylithological boulders, is found overlying type 1 soils in places too thick to penetrate.
3. Organic soil, consisting of poorly decomposed rootlet material was sampled where it was thicker than 70 cm in swamps.
4. Alluvial silts, consisting of grey silt and clay thicker than 70 cm were encountered in some swampy areas. These could be paleo-drainages or ponds.

A total of 141 soils were taken at 25 m intervals over geophysical anomalies. Nine soils were also taken in profiles within three small hand trenches. During collection, samples were coded for the following properties: (1) Wet or dry, (2) sample depth, (3) organic presence in sample, (4) depth of "A" horizon, (5) presence of volcanic ash layer, (6) color, (7) texture, (8) horizon sampled, (9) vegetation types, (1) slope, (11) angularity of rock fragments, (12) presence of frost boils, and (13) presence of iron precipitates.

Samples were packaged in standard kraft envelopes and shipped to Bondar Clegg Ltd., in Whitehorse, for drying, screening and analysis. Minus 80 mesh portions were digested in aqua regia and analysed for lead, zinc and silver by Atomic Absorption. Histograms and cumulative frequency curves were plotted for each element and are appended.

Values for each element are plotted on maps 9, 10 and 11.

Cumulative frequency curves for all three elements show a mixing of populations depicting different soil and rock types. Lead values for inorganic soils show a well defined line in the upper 30% of the data with a mean plus two standard deviations (threshold) of 142 ppm and mean plus three standard deviations of 500 ppm. The upper 40% of zinc values plot as a straight line on cumulative frequency paper with mean plus two standard deviations of 860 ppm and mean plus three deviations of 2500 ppm. There is a small break in the line at 540 ppm which may actually be a lower threshold. A break in the silver line on the cumulative frequency graph at 1.4 ppm (6% of the data) is taken as the threshold. Mean plus three standard deviation of the projected background line is 3.8 ppm silver. There are no values above 3.8 ppm.

ANOMALIES

Anomalies are sporadic with extreme elemental variation within the major anomalous trend. The strongest anomaly (lead-zinc-silver) occurs on line 78E between 76+75N and 75+75N (125 m wide). This anomaly is seen in zinc and silver on line 80E in silver and weak lead (two samples). On line 84E the same anomaly occurs in a single sample anomalous in lead and zinc at 76N. This anomaly becomes intermittent eastward and is untraceable westward because of a beaver dammed lake. Its total length is approximately 600 m.

One lines 94E at 83+50N and line 96 at 82+83N, lead values are above threshold. Silver is also anomalous on line 94 with the lead.

Other anomalies in this data are single samples usually one element and should only be considered if coincident with high order geophysical anomalies.

REFERENCES

Bostock, H.S.

1948: Physiography of the Canadian Cordillera with special reference to the area north of the fifty-fifth parallel; Geol. Surv. Can., Mem. 247.

Gabrielse, H.

1967: Tectonic Evolution of the Canada Cordillera; Can. J. Earth Sci., v.4, pp. 271-298.

Templeman-Kluit, D.J.

1977: Quiet Lake and Finlayson Lake Map-area, Yukon Territories; Geol. Surv. Can., Open File 486.

Wright, James L.

1979: Geophysical Report on Hench Claims; Internal Report for St. Joseph Explorations Ltd.

APPENDIX I

List of personnel, addresses and time employed on the project:-

D.A.R. Hendry, 672 Pleasant Street, Kamloops, B.C., V2C 3B2

July 21 & 23 - 27
August 10
September 12
November 8, 9 & 10, 1979

Ralph Shearing, Appt. 102, 3681 W. 8th, Vancouver, B.C.

July 21 & 23 - 27
August 10
September 12
November 8, 9 & 10, 1979

James L. Wright, 27 Fraserwood Street, Appt. 1, Toronto, Ontario

June 13 - 22 and 27 - 30, 1979

Dwayne M. Windsor, 59 - 5th Street, Hornepayne, Ontario, POM 1Z0

June 13 - 30, 1979

Tom W. Ebbern, 1134 Lake Christina Way, Calgary, Alberta

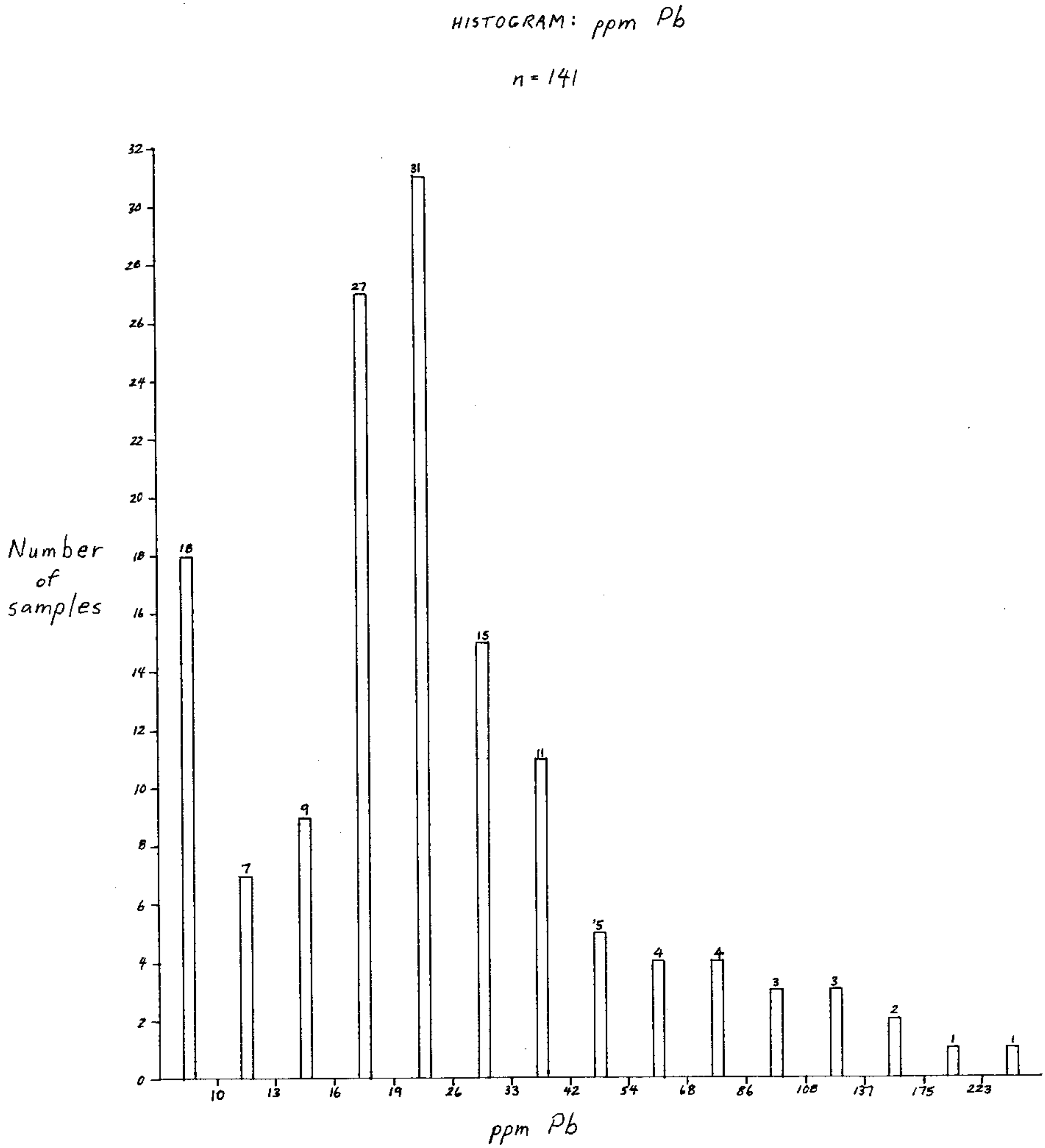
June 13 - 30, 1979

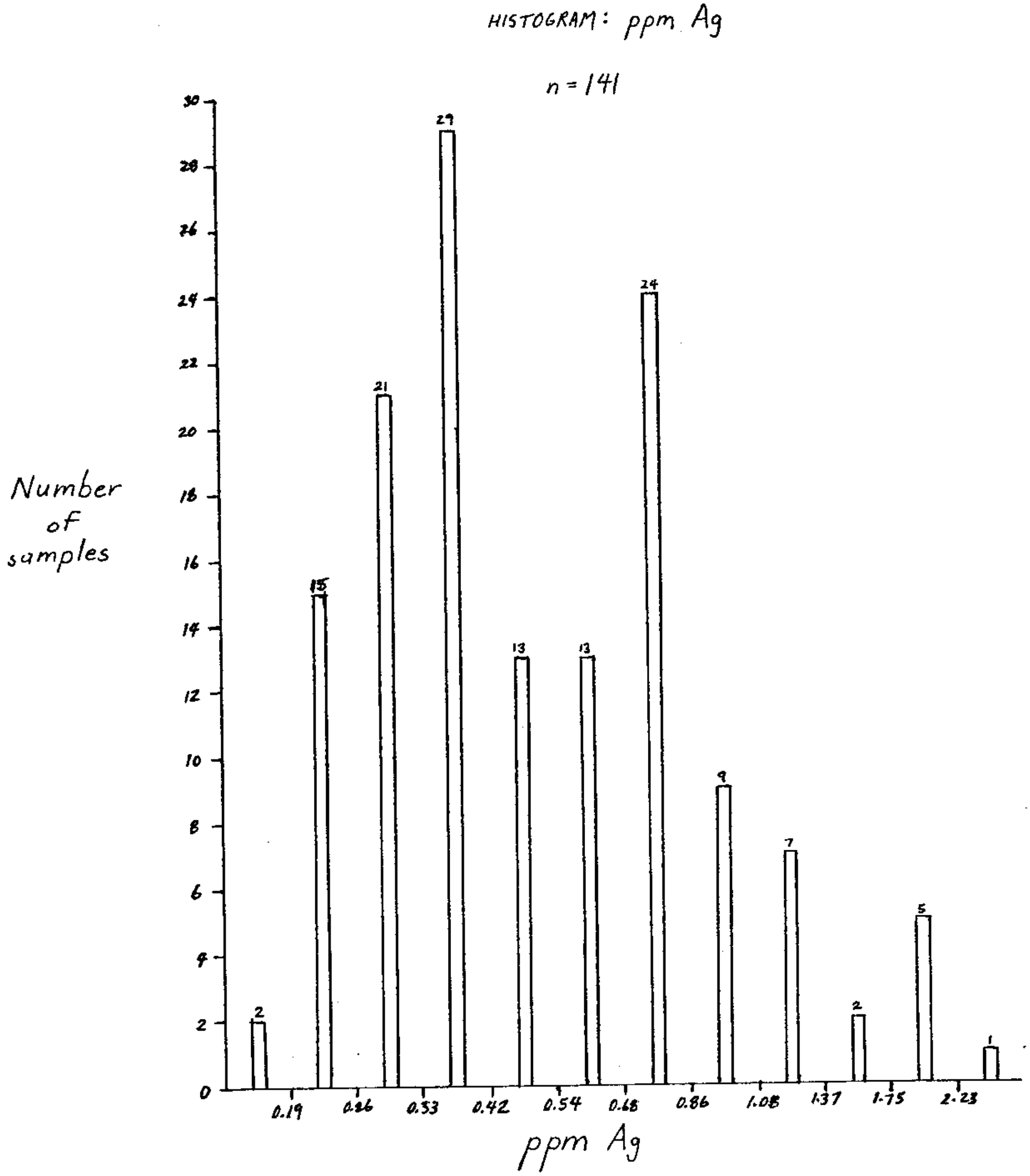
Jacque Bilinski, 57 Brunswick Beach Road, Lions Bay, B.C., VON 2E0

June 13 - 30, 1979

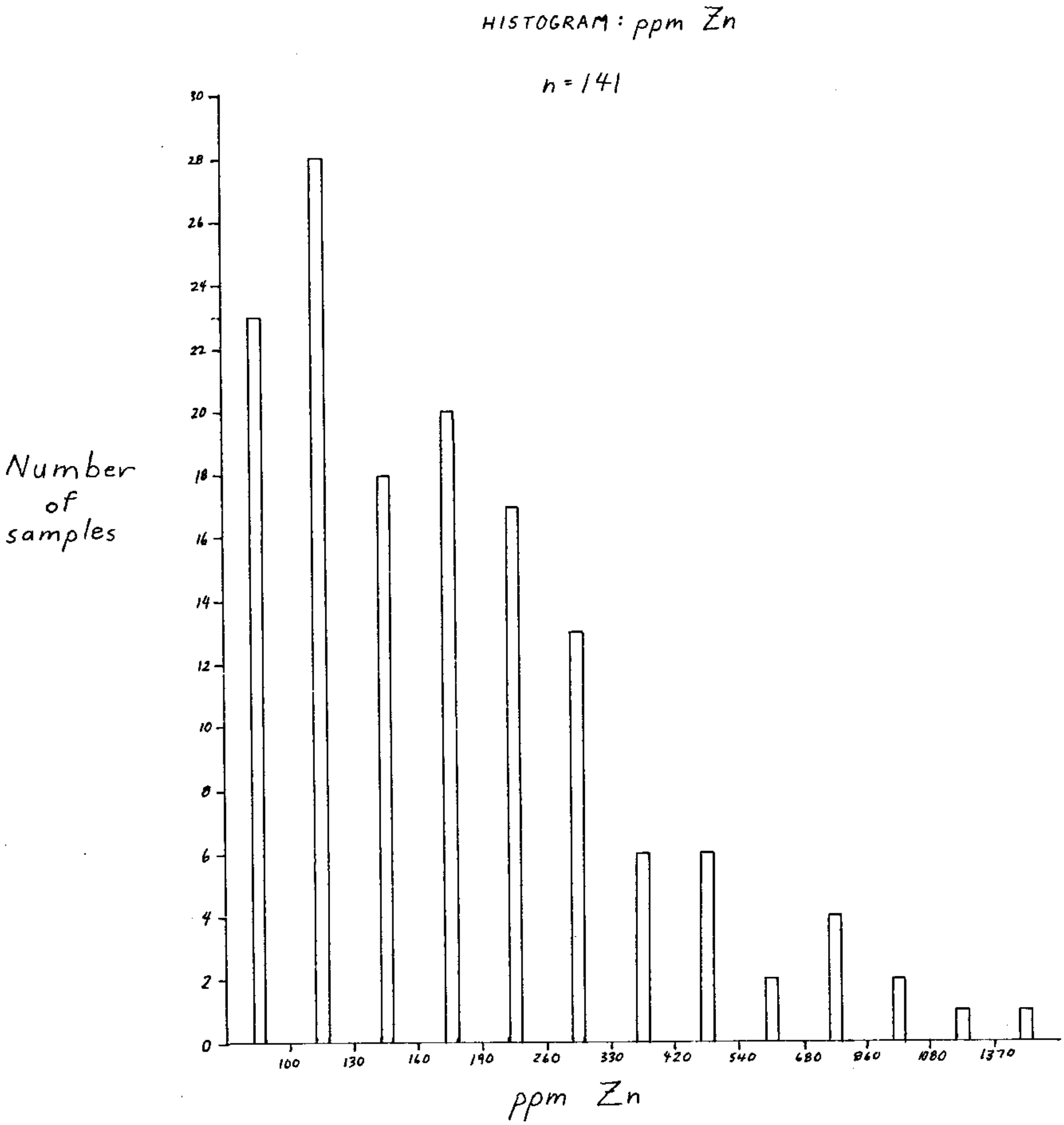
APPENDIX II

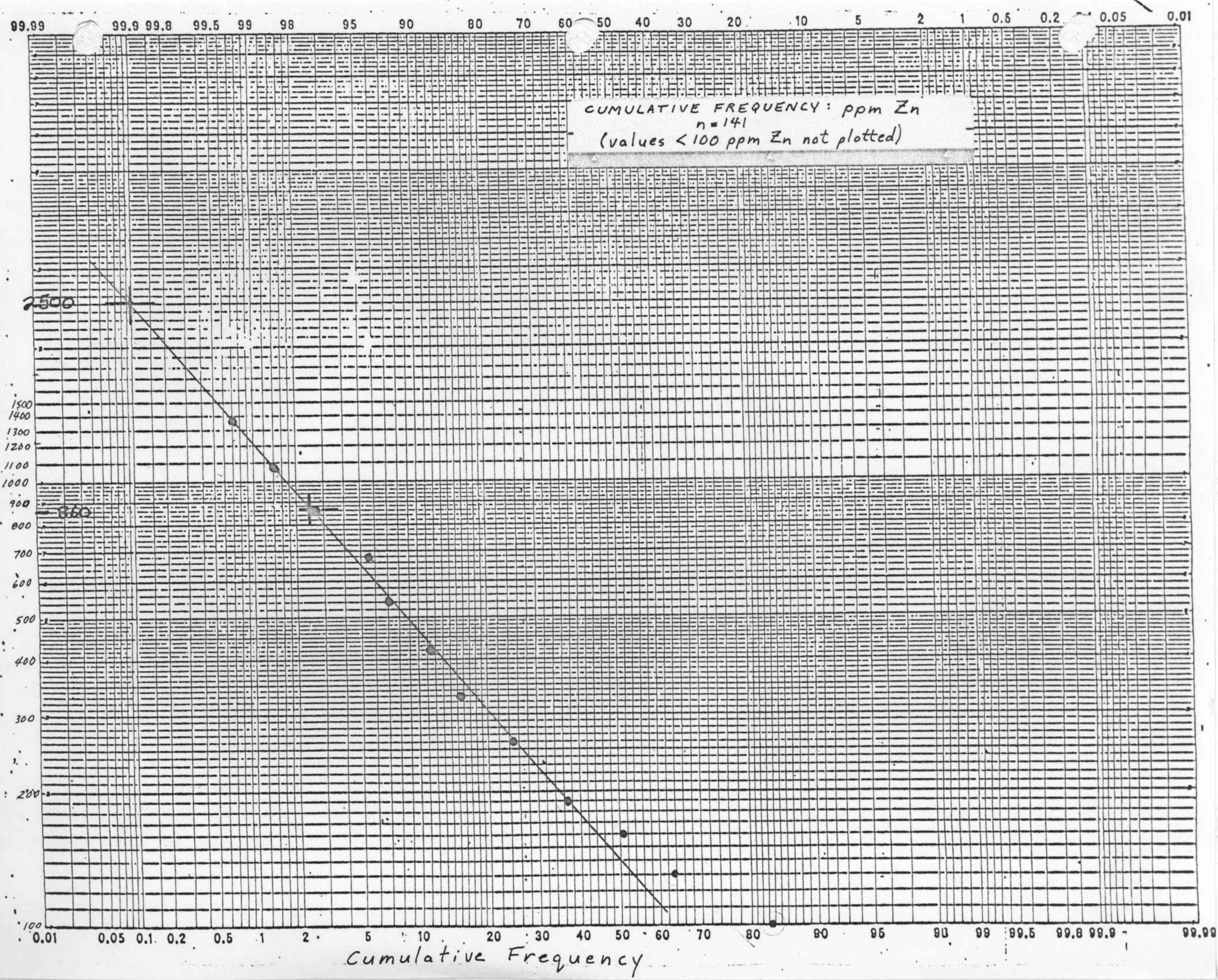
GEOCHEM STATISTICS

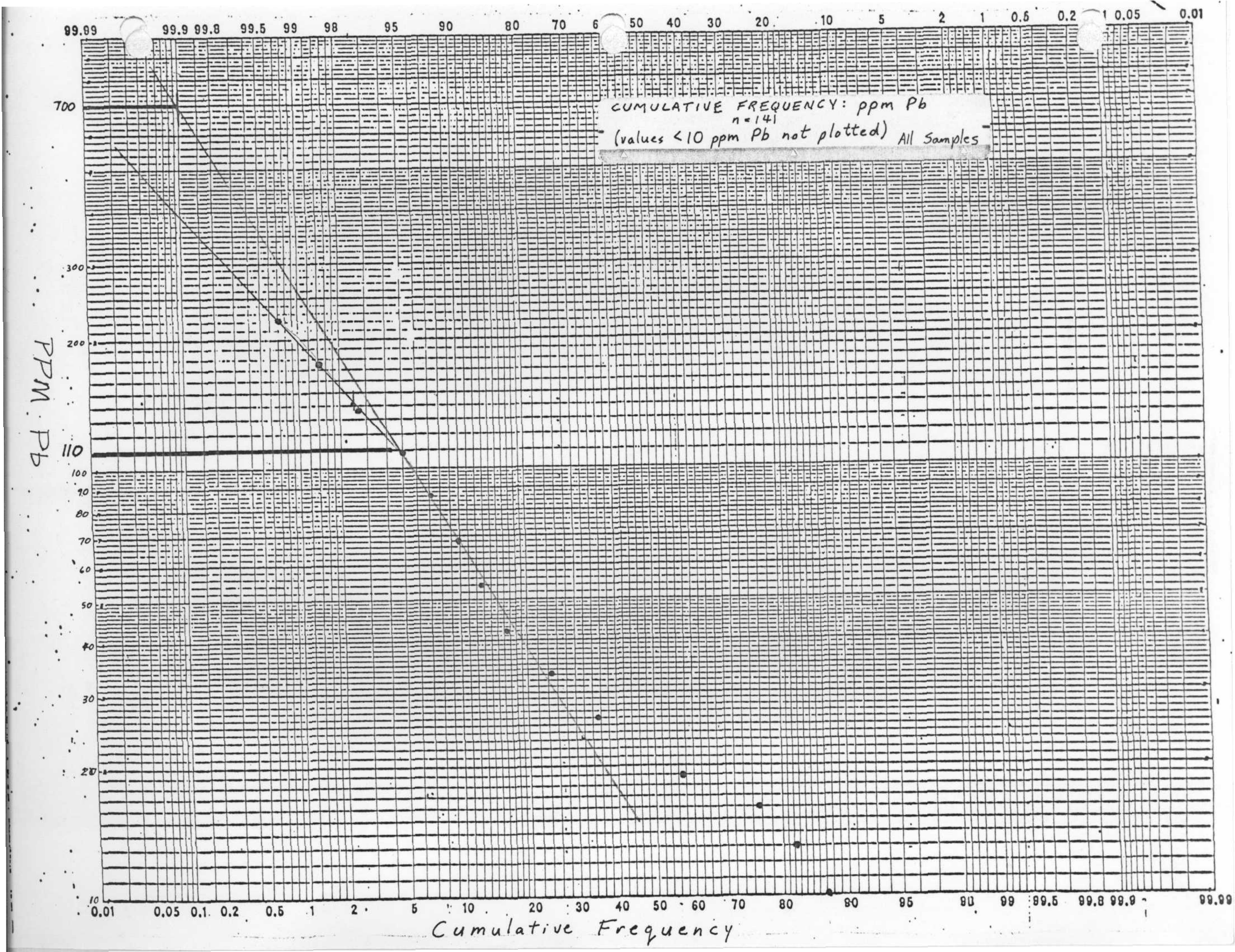

HISTOGRAM: ppm Pb
n = 141
Number of samples
ppm Pb
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
18
7
9
27
31
15
11
5
4
4
3
3
2
1
1
10
13
16
19
26
33
42
54
68
86
108
137
175
223

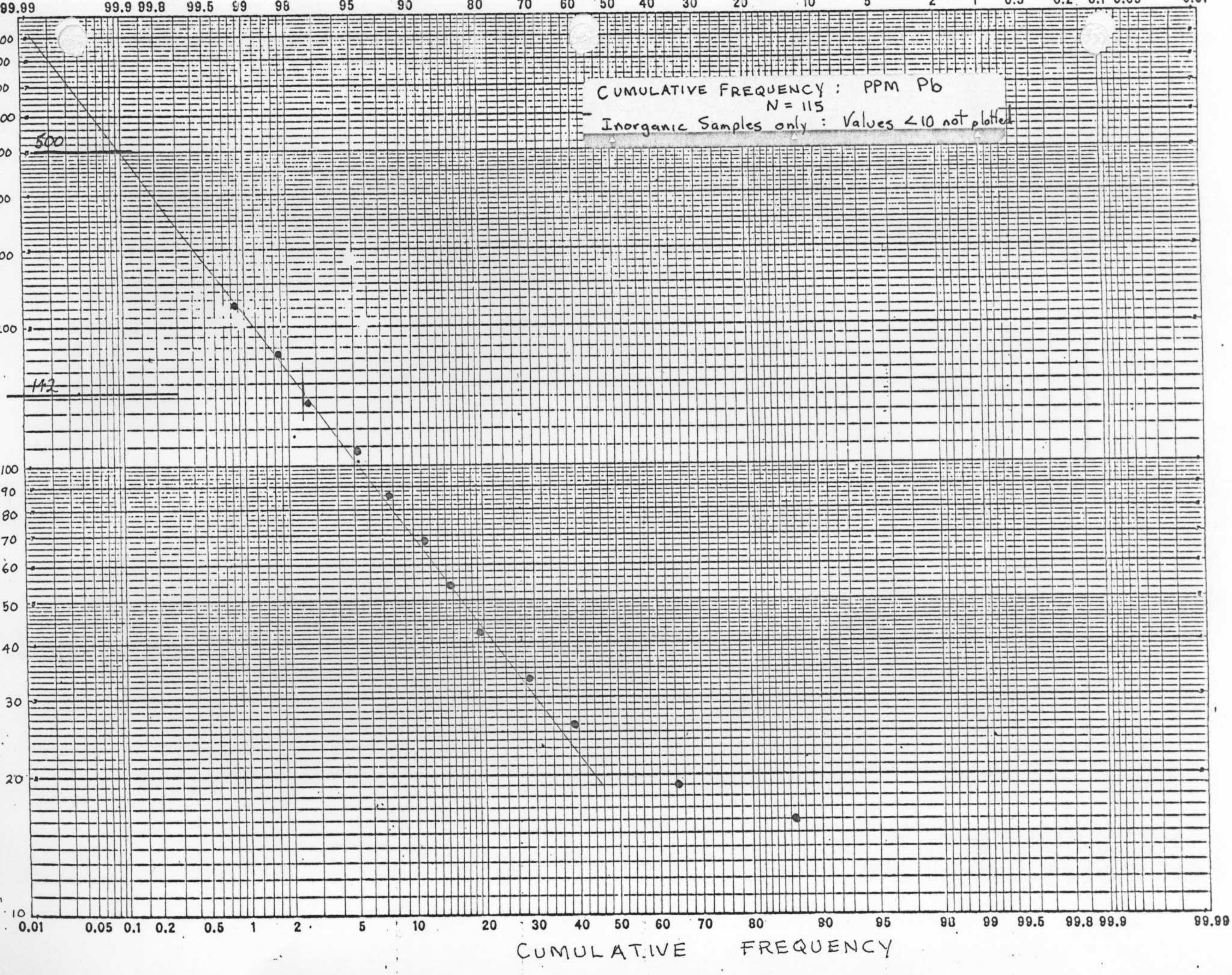


HISTOGRAM: ppm Ag
n = 141
Number of samples
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
2
15
21
29
13
13
24
9
7
2
5
1
0.19
0.26
0.33
0.42
0.54
0.68
0.86
1.08
1.37
1.75
2.23
ppm Ag

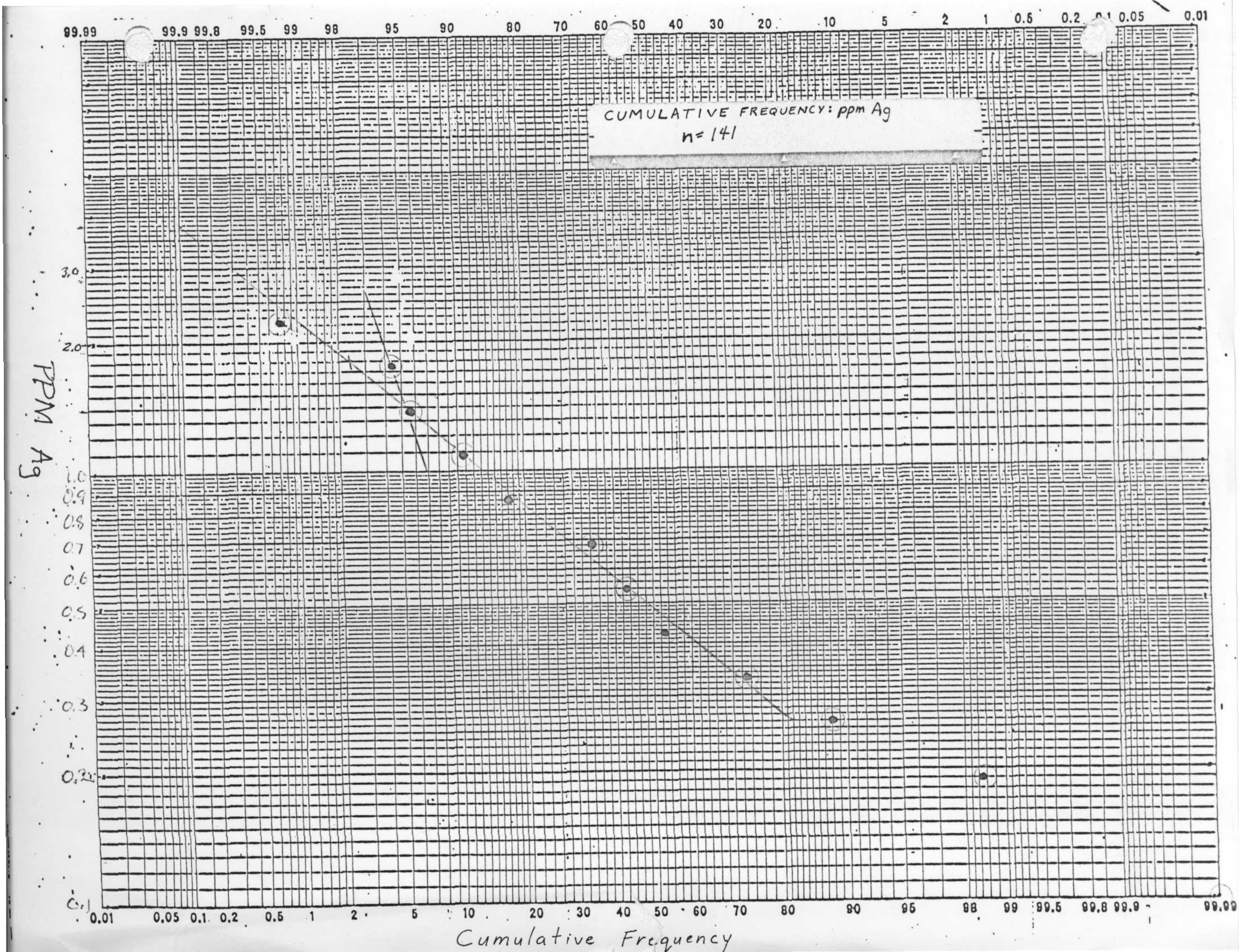

HISTOGRAM: ppm Zn
n = 141
Number of samples
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
100
130
160
190
260
330
420
540
680
860
1080
1370
ppm Zn


CUMULATIVE FREQUENCY: ppm Zn
n=141
(values <100 ppm Zn not plotted)
2500
860
PPM Zn
Cumulative Frequency


CUMULATIVE FREQUENCY: ppm Pb
n=141
(values <10 ppm Pb not plotted) All Samples
PPM Pb
700
300
200
110
100
90
80
70
60
50
40
30
20
10
99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
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 99.5 99.8 99.9 99.99
Cumulative Frequency



CUMULATIVE FREQUENCY : PPM Pb
N = 115
Inorganic Samples only : Values <10 not plotted
500
142
PPM. Pb
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
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 99.5 99.8 99.9 99.99
99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1
CUMULATIVE FREQUENCY



CUMULATIVE FREQUENCY: ppm Ag
n= 141
PPM Ag
Cumulative Frequency

SCALE

0 100 200 300 400 metres

+ Projected post location

23 Claim number

YA 34567 Tag number

○ ● Soil sample (Inorganic, Organic A Horizon)

Cut grid, 25m pickets

○ Claim post

Claim line

Lake

Swamp, stream

To accompany a report by D.A.R. Hendry

Date: Dec. 20, 1979

N

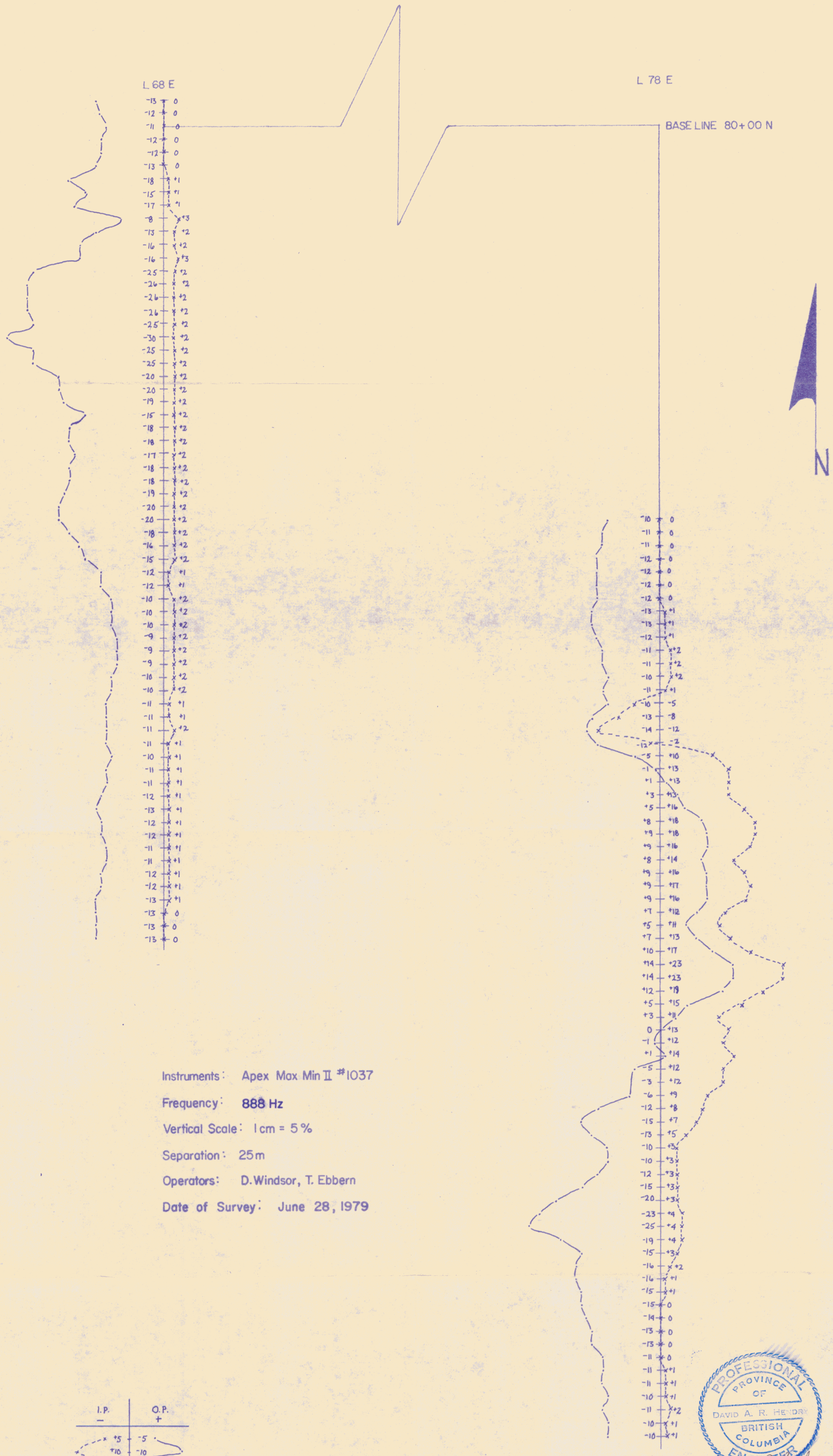
ST. JOSEPH EXPLORATIONS LIMITED

TORONTO, CANADA

HENCH CLAIMS, YUKON
GEOCHEMISTRY
1979 Soil Pits
SAMPLE & CLAIM LOCATION

SCALE: 1:5000

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. 62° 02' 12" LATITUDE 131° 21' 24" LONGITUDE	PROJECT NO. 6261-2	SHEET NO. ___ OF ___
	MAP NO. 1	N.T.S. 105-J-3



Instruments: Apex Max Min II #1037

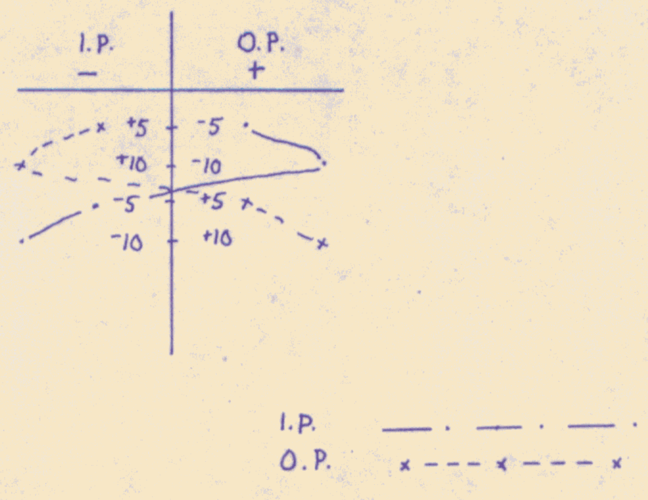
Frequency: 888 Hz

Vertical Scale: 1 cm = 5 %

Separation: 25 m

Operators: D. Windsor, T. Ebbern

Date of Survey: June 28, 1979



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. R. HENDRY

David Hendry

ST. JOSEPH EXPLORATIONS LIMITED

TORONTO, CANADA

HENCH CLAIMS, YUKON

HELM SURVEY

888 HZ

SCALE: 1" = 1250

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. ° ' " LATITUDE ° ' " LONGITUDE	PROJECT NO. 6261-2	SHEET NO. ___ OF ___
	REPORT NO.	N.T.S. 105-J-3

Instrument: Max Min II #1037

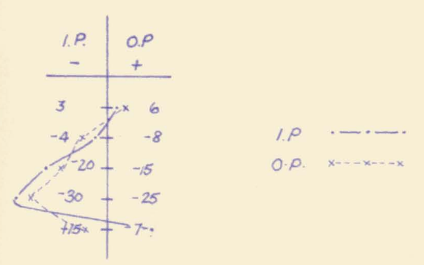
Frequency; 888 Hz

Vertical Scale: 1 cm = 20%

Separation: 100m

Operators: D. Windsor, J. Bilinski, T. Ebbern

Dates of Survey: June 16, 17, 22-26, 1979



SYMBOLS

Claim post

Claim line

Lake

Swamp, stream

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

DAVID A. K... ...ER

ST. JOSEPH EXPLORATIONS LIMITED

TORONTO, CANADA

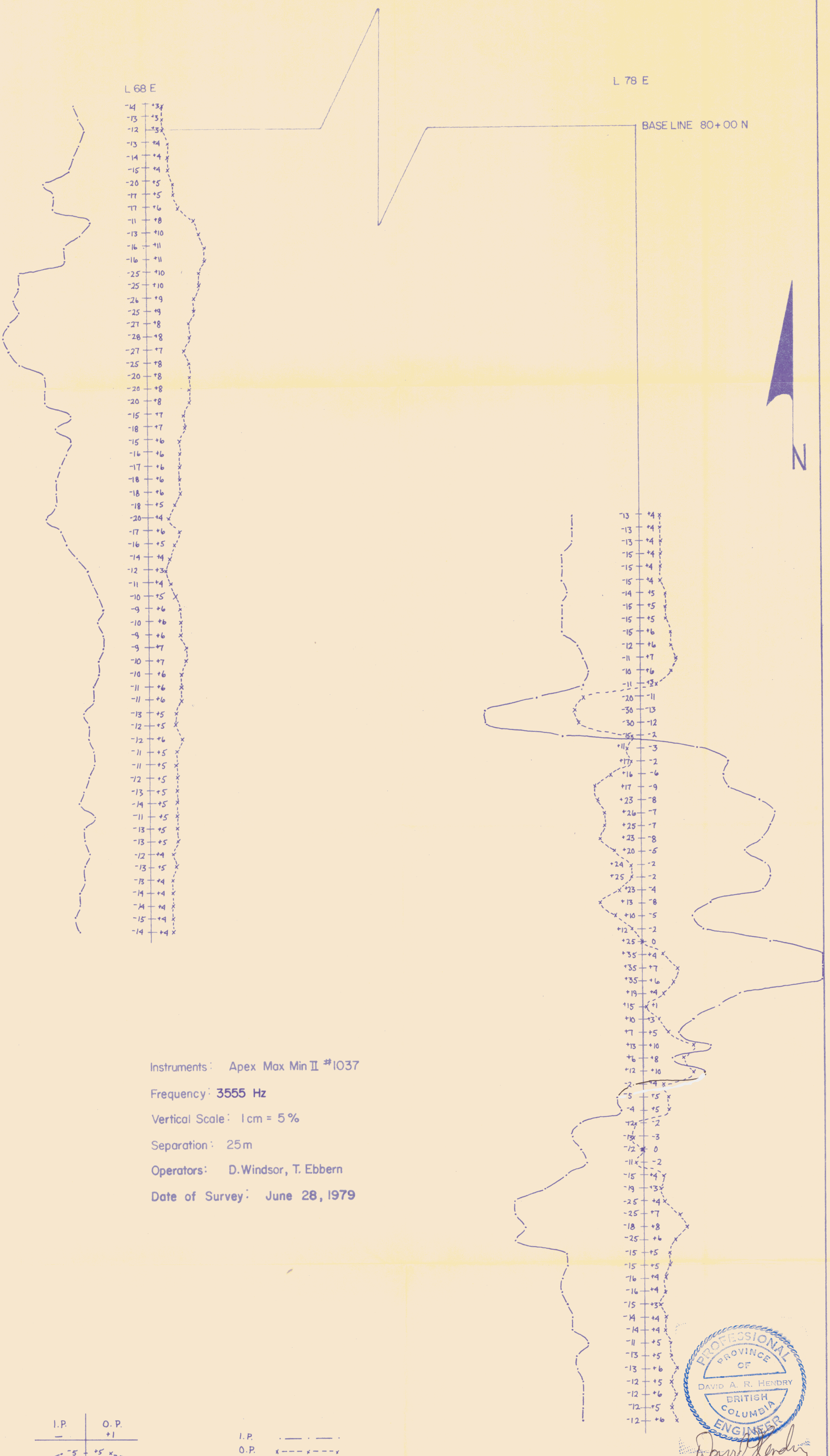
HENCH CLAIMS, YUKON

HELM SURVEY

888 HZ

SCALE 1:5000

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG ° ' " LATITUDE ° ' " LONGITUDE	PROJECT NO. 6261 ?	SHEET NO ___ OF ___
	REPORT NO.	N.T.S. 105-J-3



Instruments: Apex Max Min II #1037

Frequency: 3555 Hz

Vertical Scale: 1 cm = 5 %

Separation: 25 m

Operators: D. Windsor, T. Ebbern

Date of Survey: June 28, 1979

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. R. HENDRY

David Hendry

ST. JOSEPH EXPLORATIONS LIMITED

TORONTO, CANADA

HENCH CLAIMS, YUKON

HELM SURVEY

3555 HZ

SCALE: 1" = 1250

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. ___° ___' ___" LATITUDE ___° ___' ___" LONGITUDE	PROJECT NO. 6261-2	SHEET NO. ___ OF ___
	REPORT NO.	N.T.S. 105-J-3

NOTES:

Instrument: Max Min II (apex)# 1037
Frequency: 3555 Hz.
Vertical scale: 1cm = 20%
Cable separation: 100m
Operators: D. Windsor, J. Bilinski, T. Ebbern
Date: June 16, 17, 22-26, 1979.

I.P. – O.P. +

I.P.
O.P.

SYMBOLS

Claim post
Claim line
Lake
Swamp, stream

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. R. HENDRY

David Hendry

ST. JOSEPH EXPLORATIONS LIMITED
TORONTO, CANADA

HENCH CLAIMS, YUKON

H.L.E.M. 3555 HZ

SCALE: 1:5000

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG.	PROJECT NO. 6261·2	SHEET NO. ___ OF ___
___ ° ___ ' ___ " LATITUDE ___ ° ___ ' ___ " LONGITUDE	REPORT NO. ___	N.T.S. 105-J-3

NOTES:

Instruments: Geonics EM 16 V.L.F.

Line Interval: 200 m
Station Interval: 25 m
Contour Interval: 10 units

Transmiter station: Cutler, Maine (17.8 KHz)

Personnel: J.L. Wright, T.W. Ebbern
D. Winsor, J. Bilinski

Dates: June 16, 1979, June 17, 1979, June 19, 1979

SYMBOLS

○	Claim post
— —	Claim line
	Lake
	Swamp, stream

PROFESSIONAL
PROVINCE OF
DAVID A. R. HENDRY
BRITISH COLUMBIA
ENGINEER

David Hendry

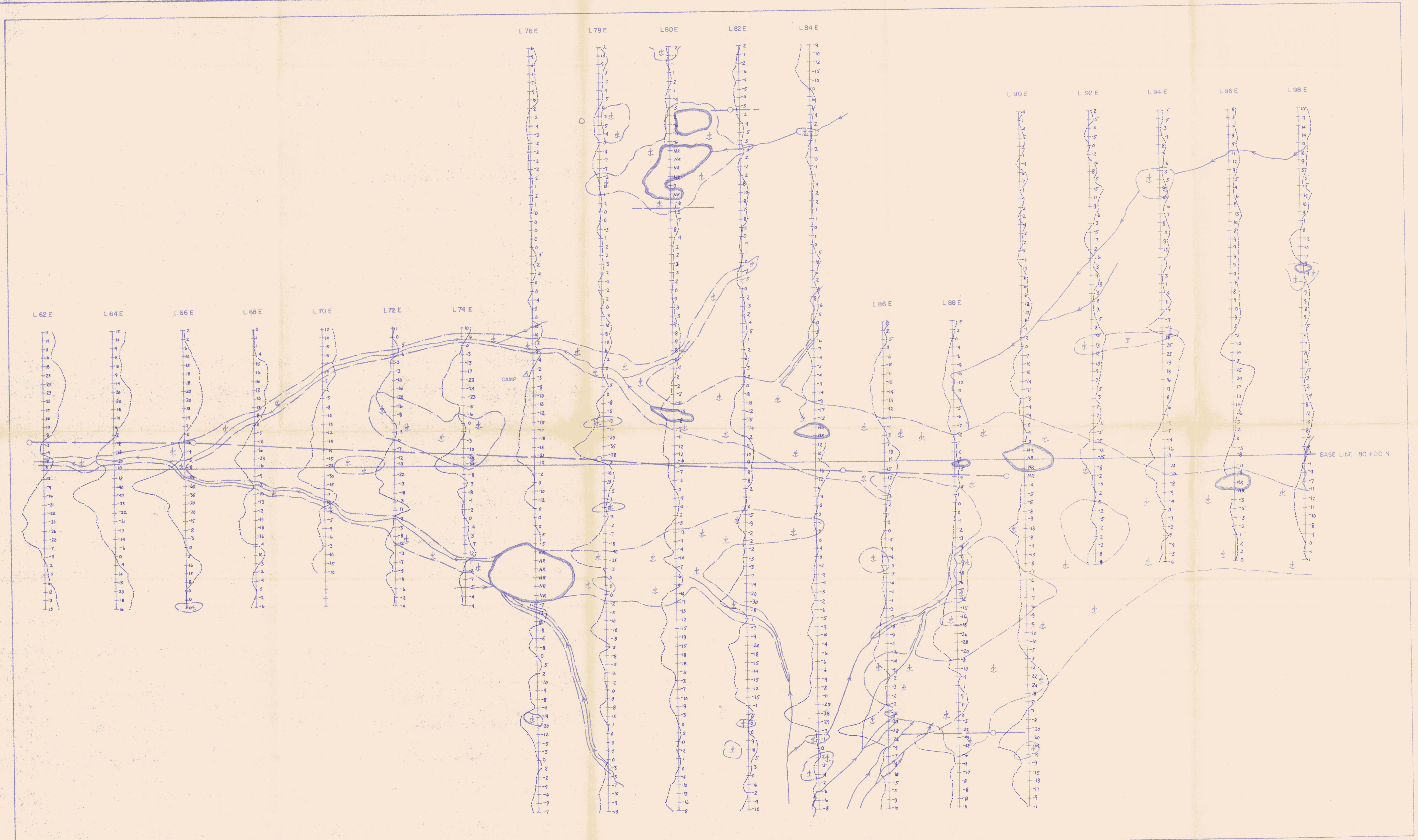
N

ST. JOSEPH EXPLORATIONS LIMITED
TORONTO, CANADA

HENCH CLAIMS, YUKON
FRASER PLOT
VLF SURVEY

SCALE 1:5000

APPROX LAT & LONG OF LOWER RT COR OF DWG. ___° ___' ___" LATITUDE ___° ___' ___" LONGITUDE	PROJECT NO 6261-2	SHEET NO. ___ OF ___
	REPORT NO. ______	N.T.S. 105-J-3



Instruments: Geonics EM-16

Transmitting Station: Cutler, Maine, U.S.A.

Frequency: 17.8 KHz

Line Interval: 200 m

Station Interval: 25 m

Profile Scale: 1cm = 20°

Personnel: T. W. Ebbern, D.M.Windsor, J. Bilinski

Dates: June 16-17, 19, 21-24, 26-28, 1979

PROVINCE OF BRITISH COLUMBIA
DAVID A. R. HENDERSON
ENGINEER

SYMBOLS

Claim post

Claim line

Lake

Swamp, stream

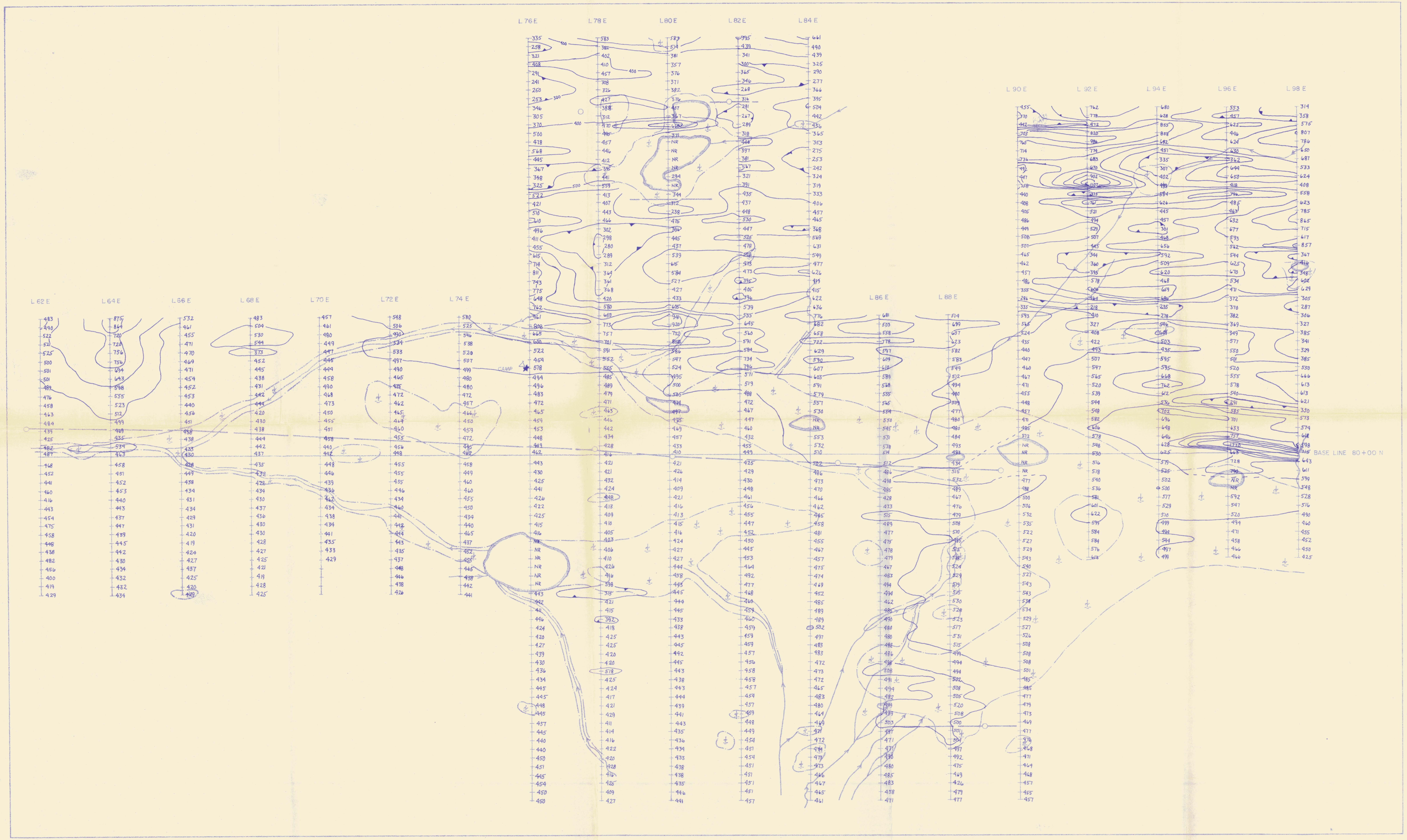
ST. JOSEPH EXPLORATIONS LIMITED
TORONTO, CANADA

HENCH CLAIMS, YUKON

VLF SURVEY
DIP ANGLE

SCALE 1:5000

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. ___ ° ___ ' ___ " LATITUDE ___ ° ___ ' ___ " LONGITUDE	PROJECT NO. 6261-2	SHEET NO ___ OF ___
	REPORT NO. ___	N.T.S. 105-J-3



Instruments: Barringer GM-122
Scintrex MBS-2

Base Station Location: L 7600 E, 8250 N

Base Station Value: 500 γ

Datum Subtracted: 58000 γ

Station Interval: 25 m

Line Spacing: 200 m

Contour Interval: 100 γ < 1000 γ, 500 γ > 1000 γ

★ Magnetic Base Station

Personnel: T. W. Ebbern, J. L. Wright, D. M. Windsor, J. Bilinski

Dates: June 16, 17, 19, 21-24, 26-28, 1979

PROFESSIONAL
PROVINCE OF
DAVID A. R. HENDRY
BRITISH COLUMBIA
ENGINEER

Dave Hendry

SYMBOLS

○ Claim post

Claim line

Lake

Swamp, stream

ST. JOSEPH EXPLORATIONS LIMITED
TORONTO, CANADA

HENCH CLAIMS, YUKON

MAGNETOMETER SURVEY

SCALE: 1:5000

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. ° ' " LATITUDE ° ' " LONGITUDE	PROJECT NO. 6261-2	SHEET NO. OF
	REPORT NO.	N.T.S. 105-J-3

L 62 E
L 64 E
L 66 E
L 68 E
L 70 E
L 72 E
L 74 E
L 76 E
L 78 E
L 80 E
L 82 E
L 84 E
L 86 E
L 88 E
L 90 E
L 92 E
L 94 E
L 96 E
L 98 E
CAMP
BASE LINE 80+00 N
Inorganic samples only:
values <10 not plotted
Pb
ppm
n=115
Cumulative Frequency
greater than 500 ppm
250 to 499 ppm
140 to 249 ppm
Soil sample (Inorganic; Organic A Horizon)
0
500 METRES
SYMBOLS
Claim post
Claim line
Lake
Swamp, stream
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. R. HENDRY
To accompany a report by D.A.R. Hendry
Date: Dec. 20, 1979
N
ST. JOSEPH EXPLORATIONS LIMITED
TORONTO, CANADA
HENCH CLAIMS, YUKON
GEOCHEMISTRY
1979 Soil Pits
LEAD - ppm
SCALE: 1:5000
APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG.
62° 02' 12" LATITUDE
131° 21' 24" LONGITUDE
PROJECT NO. 62612
MAP NO. 9
SHEET NO. ___ OF ___
N.T.S. 105-J-9

Dave Hendry

To accompany a report by D.A.R. Hendry

Date: Dec. 20, 1979

ST. JOSEPH EXPLORATIONS LIMITED

TORONTO, CANADA

HENCH CLAIMS, YUKON
GEOCHEMISTRY
1979 Soil Pits
ZINC - ppm.

SCALE: 1:5000

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG. 62° 02' 12" LATITUDE 131° 21' 24" LONGITUDE	PROJECT NO. 6261·2 MAP NO. 10	SHEET NO. ___ OF ___ N.T.S. 105-J-3

L 62 E
L 64 E
L 66 E
L 68 E
L 70 E
L 72 E
L 74 E
L 76 E
L 78 E
L 80 E
L 82 E
L 84 E
L 86 E
L 88 E
L 90 E
L 92 E
L 94 E
L 96 E
L 98 E
CAMP
BASE LINE 80+00 N
Ag
ppm
n=141
Cumulative Frequency
greater than 3.0 ppm
2.1 to 3.0 ppm
1.3 to 2.0 ppm
Soil sample (Inorganic; Organic A Horizon)
500 METRES
SYMBOLS
Claim post
Claim line
Lake
Swamp, stream
To accompany a report by D.A.R. Hendry
Date: Dec. 20, 1979
ST. JOSEPH EXPLORATIONS LIMITED
TORONTO, CANADA
HENCH CLAIMS, YUKON
GEOCHEMISTRY
1979 Soil Pits
SILVER – ppm.
SCALE: 1:5000
APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG.
62° 02' 12" LATITUDE
131° 21' 24" LONGITUDE
PROJECT NO. 6261-2
MAP NO. 11
SHEET NO. ___ OF ___
N.T.S. 105-J-3
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. R. HENDRY