

# 4955

93N/15W  
94C/2W

A GEOLOGICAL AND GEOCHEMICAL REPORT

ON

THE OSI CLAIM GROUP

7 MILES NORTH-NORTH-EAST OF NINA LAKE

OMINECA MINING DIVISION

BRITISH COLUMBIA

MINERAL CLAIM MAPS 93N/15W AND 94C/2W

Latitude: 56°00' N

Longitude: 124°46' W

FOR

SEREM LTD

BY

P. SONNENDRUCKER, P.ENG.  
GEOLOGICAL ENGINEER

Field work: June 20 - 30, 1973  
August 17 - 23, 1973

Report: May 1974.

Department of  
Mineral Resources  
Geological Survey of Canada  
NO. **4955** File

## TABLE OF CONTENTS

1. Introduction
2. Property and ownership
3. Location and access
4. Physiography
5. Geology
  - Regional
  - Local
  - Mineralization
6. Geochemical Survey in soils.
  - Survey method -Sampling method -Assay method
  - Results and interpretation.
7. Rock geochemistry
8. Conclusion and recommendations

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Annexe I : Statement of expenses.

Annexe II: Statement of qualifications

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### Illustrations

- In text #1 Figure 1 : Index Map  
#2 Figure 2 : Mineral Claims Map  
#3 Figure 3 : OSI - Pb-Zn Correlation diagram in soils.  
#4 Figure 4 : OSI - Pb-Zn Correlation diagram in rocks.  
#5 Figure 5 : OSI - Pb-Zn Zoning in rocks.
- In pocket #6 Map 1 : OSI GROUP - Geology, scale 1"=400'  
#7 Map 2 : OSI GROUP - Pb Geochemistry, scale 1"=400'  
#8 Map 3 : OSI GROUP - Zn Geochemistry, scale 1"=400'

## 1. INTRODUCTION

A reconnaissance exploration program for Lead and Zinc by geochemical stream sampling was carried out by SEREM Ltd in the Omineca Mountains during the 1972 field season.

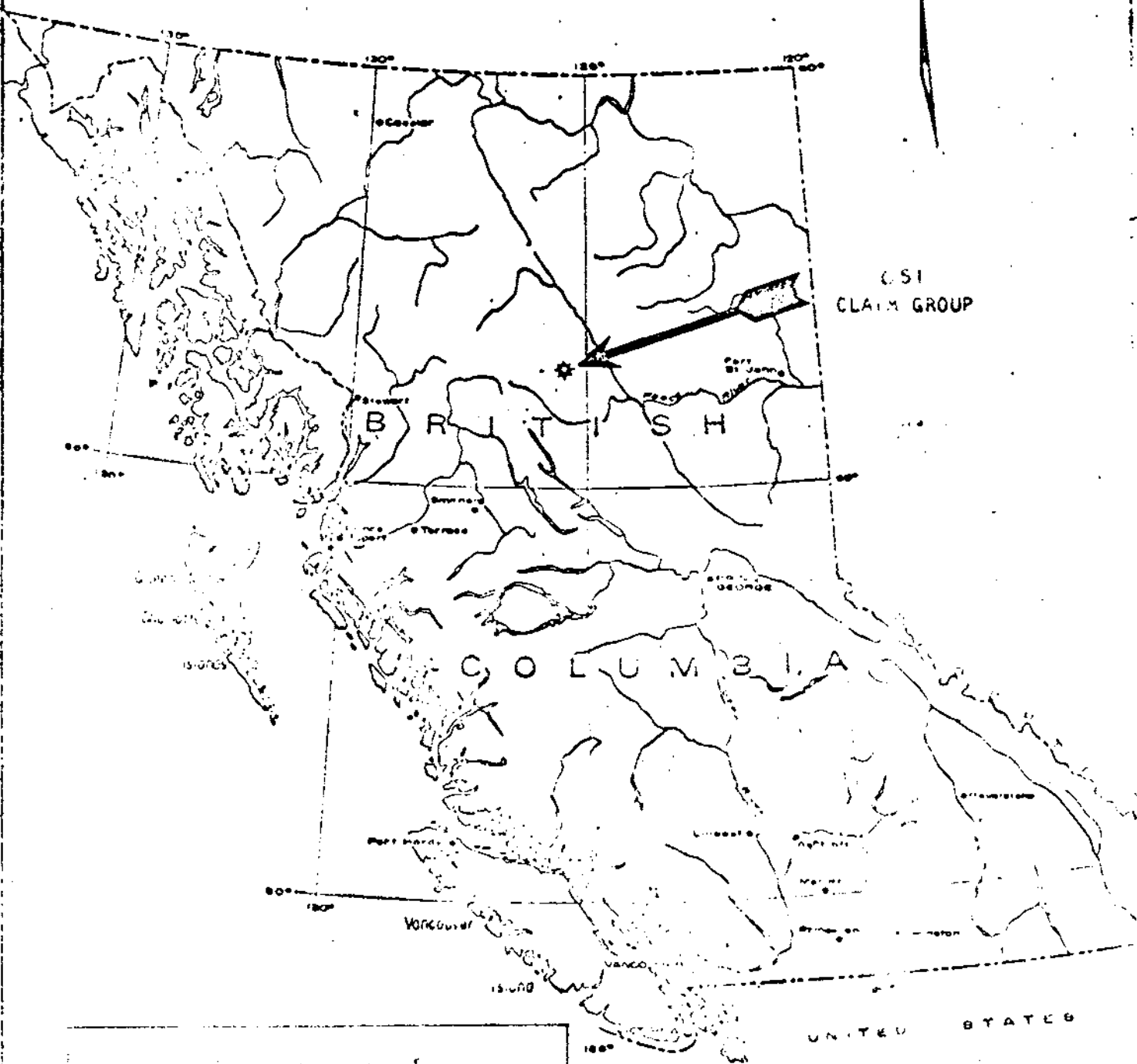
Several geochemical silt anomalies were detected in the Nina Lake area, North of Germansen Landing, beside already known showings. Rock geochemistry indicated also some anomalous values.

In a first step, eight mineral claims, called OSI #1 to 8, were located on the best indication (combined silt and rock anomalies).

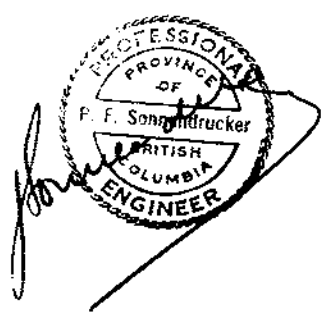
A surface exploration program of geochemical soil sampling, rock sampling and geological mapping was conducted for 10 days at the end of June 1973.

After confirmation of an extended geochemical soil anomaly and discovery of mineralized floats of dolomitized breccia, 16 additional mineral claims (OSI #9 to 24) were located in August 1973 two mineralized showings in place were found during this survey.

This report describes the work done on OSI GROUP, discusses the results and presents conclusions and recommendations. Survey data is presented on a geological map and geochemical maps for Pb and Zn, scale 1" to 400'.

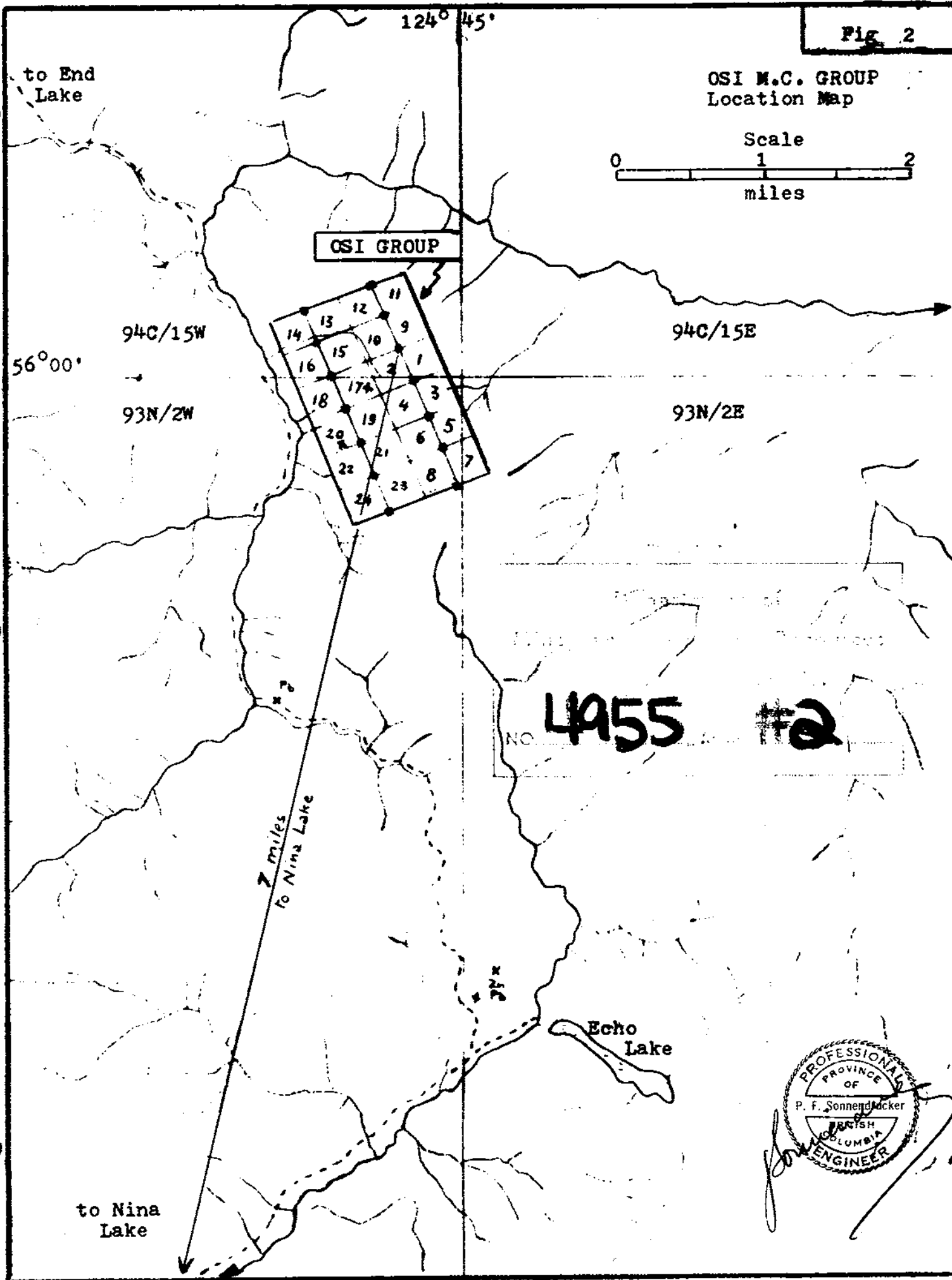
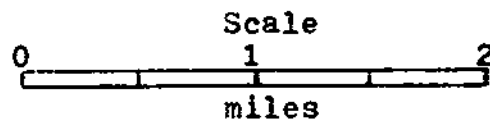


4955 #1



SEREM LTD.  
LOCATION MAP

OSI M.C. GROUP  
Location Map



PROFESSIONAL  
PROVINCE  
OF  
P. F. Sonnendacker  
BRITISH  
COLUMBIA  
ENGINEER

## 2. PROPERTY AND OWNERSHIP

The OSI # 1 - 8 Mineral Claims were located for SEREM Ltd on June 4, 1973 and recorded at Smithers Mining Recorder, Omineca Mining Division, on June 15, 1973, under Records No. 125922 - 125929, inclusive.

The OSI # 9 - 24 M.C. were located for SEREM Ltd on August 18, 1973 and recorded at Smithers on September 5, 1973, under Records No. 127977 - 127992 inclusive.

Notice to group the 24 Mineral Claims into the OSI GROUP was filed on May 13, 1974.

The OSI GROUP is owned by SEREM Ltd, 505-850 West Hastings Street, Vancouver B.C., in trust with Bergminex Associates.

SEREM Ltd, on behalf of Bergminex Associates, has been the operator for the work done in 1973 on OSI GROUP.

## 3. LOCATION AND ACCESS

The OSI GROUP is located 7 miles North-North-East of the north end of NINA LAKE, in the part of the SWANNELL RANGE, between OMINECA RIVER and OSILINKA RIVER, N.T.S. Map Sheet 93N (Manson Creek) and 94C (Aiken Lake).

The property overlaps Mineral Claim Maps 93N/15W and 94C/2W at latitude  $56^{\circ}00'N$  and longitude  $124^{\circ}46'W$ , in the Omineca Mining Division.

The property is 2,000' up-hill East of an old pack horse trail following the Nina Lake Valley and leading to End Lake, Osilinka River. Real access is by helicopter from Germansen Landing. Work was carried out in 1973 from a fly camp set up on the ridge covered by the property.

#### 4. PHYSIOGRAPHY

The OSI GROUP covers a massive mountainous ridge at the headwaters of creeks running north- and eastwards to the Omineca River. Elevations range from about 3,700' at the old trail (western border of the property) up to 5,843', top of the massive ridge, at 400' North of the OSI #5-6 initial post. The western slope of the ridge is quite steep, with rockslides, talus and cliffs.

The timberline reaches approximately the 5,300'-level. Pines are scattered within burnt areas and windfalls. Upper slopes, saddles and ridges are covered by small bushes and mosses. Carbonate rocks areas are devoid of any vegetal blanket.

Outcrops are scattered through an extensive overburden composed of loose angular rock fragments.

#### 5. GEOLOGY

##### a) Regional:

J.E.ARMSTRONG (1949) had attributed with doubt to the Cache Creek Group of Upper Paleozoic age, the limestone-slate-greenstone lithological assemblage constituting the Manson Creek Belt.

J.W.MONGER (1963, 1974) has shown that the presumed Upper Paleozoic sequence is an assemblage of formations from Late Proterozoic to Mississippian age.

The stratigraphic section, in order of decreasing age, from east to west, consists of the following units:

-Upper Precambrian to Lower Cambrian phyllite, quartzite, brown weathering ferruginous carbonate and minor pods of archeocyathid-bearing limestone (Ingenika Group of Roots, 1954).

-slight angular discordance.

-approximately, 1,000' of dolomite and dolomitic limestone.

Algalaminæ textures and algal balls of some horizons indicate shallow water deposition, probably within the intertidal zone. In places, in the upper part of the carbonate are well sorted, well rounded etched, wind blown (?) quartz sand grains. Lower Middle or possible late Lower Devonian fossils (some found and submitted by SEREMs geologist) occur just below the overlying (?) slate in a dolomite horizon that locally contains disseminated galena and sphalerite.

-slates of unknown thickness.

-thick sequence of altered basalt, locally pillowed and fragmental, with minor ribbon chert, argillite and diabase or microgabbro near the lower contact. Relationship of the volcanogenic sequence to the underlying slate is unknown. The age of these rocks is probably lower Mississippian or younger.

The units appear to form a homoclinal succession, interrupted by longitudinal or transverse faulting and local folding, dipping westwards from the Wolverine Complex.

Pre-Devonian rocks are more complexly faulted and folded than Devonian or younger ones.

b)Local: Refer to the geological map, #1, in folder.

A series of thick bedded aphanitic, grey carbonate strata outcrops through the claim group. A marker bed of black limestone associated with black argillite, 250' thick, gives indication of a local stratigraphic strike of S20°E with a westerly dip of 30°.

Dolomitic zones are randomly distributed, but show two structurally controlled facies: an earlier one of fine grained dolomite roughly stratabound (NNW-SSE trend) and a later one of coarse crystalline white dolomite along NE-SW fractures. Dolomitic breccia is noticeable with dark grey dolomitic clasts within a



coarse white dolomitic matrix.

In the vicinity of the black limestone marker, sideritic carbonate rock, stained by iron-oxides, was recognized in outcrop (East of M.C.# 7) or in floats (on M.C.# 2).

The carbonate units are in faulted contact with brown quartzitic micaceous schists of the Ingenika Group on M.C. #1 and 10.

c) Mineralization:

Observed Pb-Zn mineralization is associated with the coarse crystalline white dolomite.

On M.C.#17, the showing in place consists of a stockwerk of veinlets of siderite and hematite with dissemination of coarse galena and patches of fine honey sphalerite. Bleached stuff in the veinlets carry cerusite. A number of oxydized kidney-like floats of the same type were collected down-hill in a band trending NE-SW, 1,000' long and 200' wide.

On M.C. #20, another type of showing has been found. It is a quartz vein with coarse galena, cutting white dolomite.

6. GEOCHEMICAL SURVEY IN SOILS: Refer to the geochemical maps, #2 and #3, in folder.

a) Survey method:

A 9,000' long base-line was flagged along the M.C.#1-12 location-line with crosslines on 400' intervals. Stations were marked at 100' intervals along the base-line and cross-lines. Surveying was carried out with Silva Ranger Compass and Topofil. Elevations were noted with Thommen Altimeter.

Because of the sparse vegetation cover, this survey was done without any ecological disturbance.

A total of 19,49 miles of lines has been flagged.

b) Sampling method:

A total of 714 soil samples have been collected, mostly along a 400' x 200' grid. A detail survey at 50' x 200' was carried out in the detected anomalous area (West cross-lines from 0+00 to 8+00S)

Soil samples were taken, where possible, under the organic horizon. The poorly developed thin soil covering ridges and slopes has been considered to have residual nature. Soils are very generally "sandy" and limy.

c) Assay method:

Assays were run for Pb and Zn by Vancouver Geochemical Laboratories (Assay reports #73-79-009 and 73-79-034).

Samples were dried in a hot air drier, then sifted to -80mesh. 0.50 g. portions of the -80 mesh fraction were weighted with a torsion balance.

Extraction was by hot  $\text{HClO}_4$  and  $\text{HNO}_3$  digestion and detection by using a Techtron AA5( Atomic Absorption Spectrophotometer).

d) Results and interpretation:

The range of Pb and Zn values for the 714 soil samples is as follows:

Pb ppm:	15 - 8000
Zn ppm:	23 - 8500

Pb and Zn are positively related and no gap seems to exist within the Pb-Zn cluster (Fig.3). However, it is possible to distinguish the soils of the so-called clastic area (Ingenika Group micaschists) with low Pb and Zn values (under 40 ppm), the soils of the carbonate area and the soils of the so-called mineralized zone, with Pb and Zn above 1000 ppm.

The logarithmic distribution of the Pb and Zn values is:

ppm	10	20	40	80	160	320	640	1280	2560	5120	10240	
Pb	-	8	53	174	197	117	88	38	28	9	2	-
Zn	-	-	15	36	108	171	196	113	53	19	3	-

The Pb distribution appears **unimodal** with positive skewness and the Zn distribution is clearly unimodal. The cumulative frequency curve shows for Pb a neat break around 150ppm and for Zn a slight break around 900ppm. The graphical parameters given by these curves can be estimated:

	Pb ppm	Zn ppm
Background	120	330
Threshold	480	2100

On the maps, the isovalue lines for Pb = 480ppm and Zn = 2100ppm delineate anomalous zones within a swinging band trending ENE, 3,000' long and 200-400' wide. The band encloses the mineralized outcrops and floats found during the field survey.

Another parallel anomalous area occurs at 1,000' SE of the first one on OSI M.C. No 3.

The zigzag aspect of the main band is closely related to the topography and must reflect the structural setting of the mineralized zone.

The drop to background values is sharp and so the anomalous zones are readily identified.

Low Pb and Zn values (under 40 ppm) in soils occur on the clastic rocks area (Ingenika Group).

2 3 4 5 6 7 8 9 1

2 3 4 5 6 7 8 9 1

2 3

OPERATION INGENIKA 1973

Fig. 3

OSI M.C. Group  
Geochemical Survey in Soils  
Pb-Zn Correlation Diagram

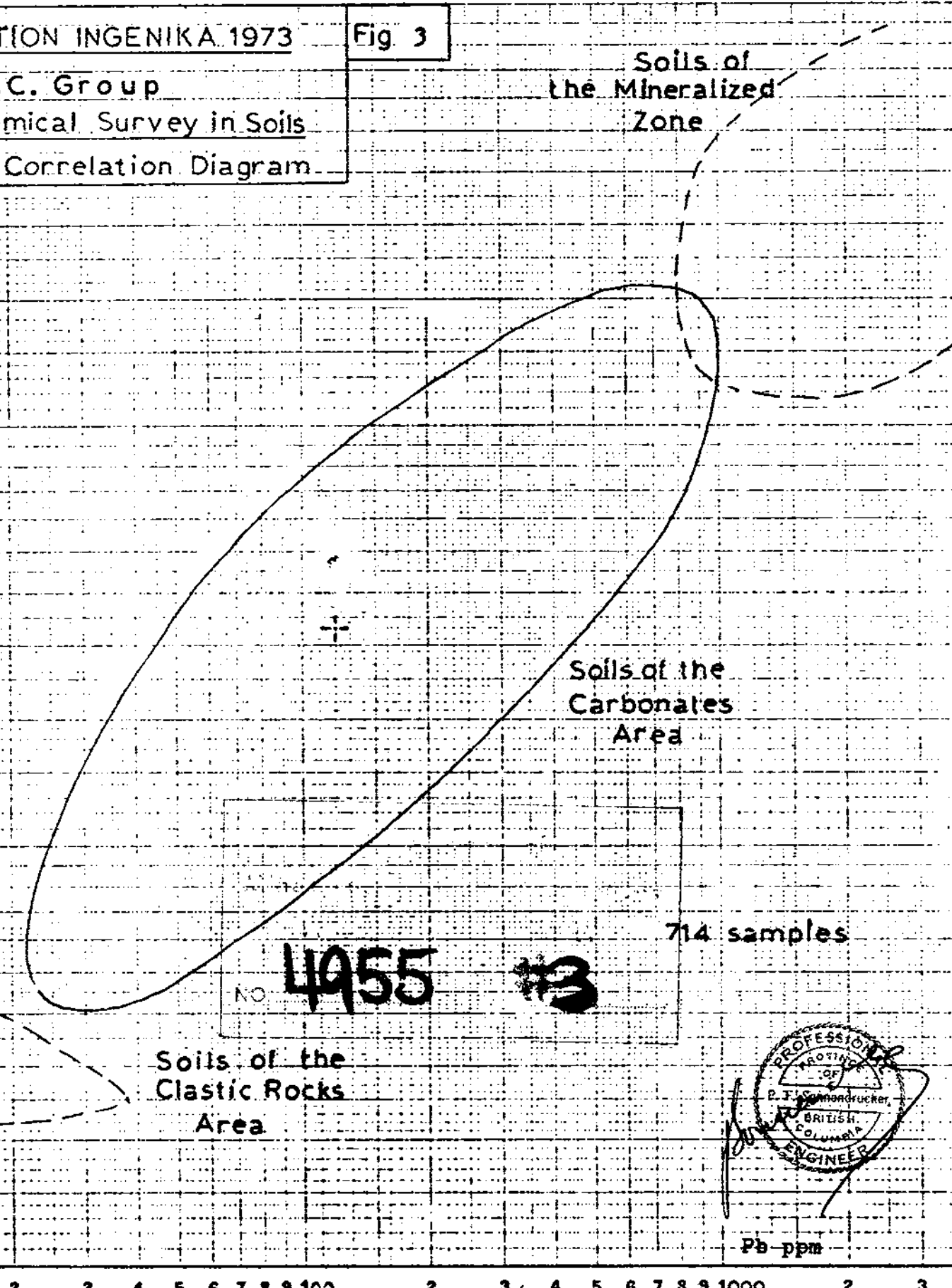
Soils of  
the Mineralized  
Zone

Zn  
ppm

1000

100

10

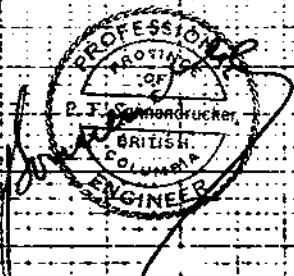


Soils of the  
Carbonates  
Area

714 samples

NO. 4955 #3

Soils of the  
Clastic Rocks  
Area



Pb ppm

10 2 3 4 5 6 7 8 9 100 2 3 4 5 6 7 8 9 1000 2 3

## 7. ROCK GEOCHEMISTRY:

42 diverse carbonate rock samples were selected on Mineral Claims #1 to 8 , during the geological mapping, for Pb, Zn and Ba geochemical analyses.

The Pb-Zn correlation diagram shows that the representative points are approximatively grouped in clusters along a trending line (Fig. 4).

These diagrammatic groupings are directly related to a zoned distribution on the ground (Fig, 5).

The so-called Area I groups rocks from the mineralized zone, known by geochemical soil survey and showings, whereas the so-called Area IV indicates probably the geochemical Pb-Zn background in rocks.

An attempt to see any relationship between Pb-and-Zn contents and rock-lithologies was done. The table shows the grouping into "normal" rocks and anomalous rocks.

No geochemical distinction appears between grey limestone and dolomitized facies in "normal" rocks (Pb-range: 32-45 ppm - Zn-range: 6-25 ppm).

However, the black limestone (the "marker bed" is quite different (Pb-range: 54-80 ppm - Zn-range: 43-87 ppm).

All individual samples, called "anomalous", are higher in Pb and Zn probably because of metallization in relationship with the stockwerk structure.

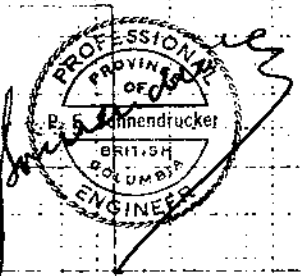
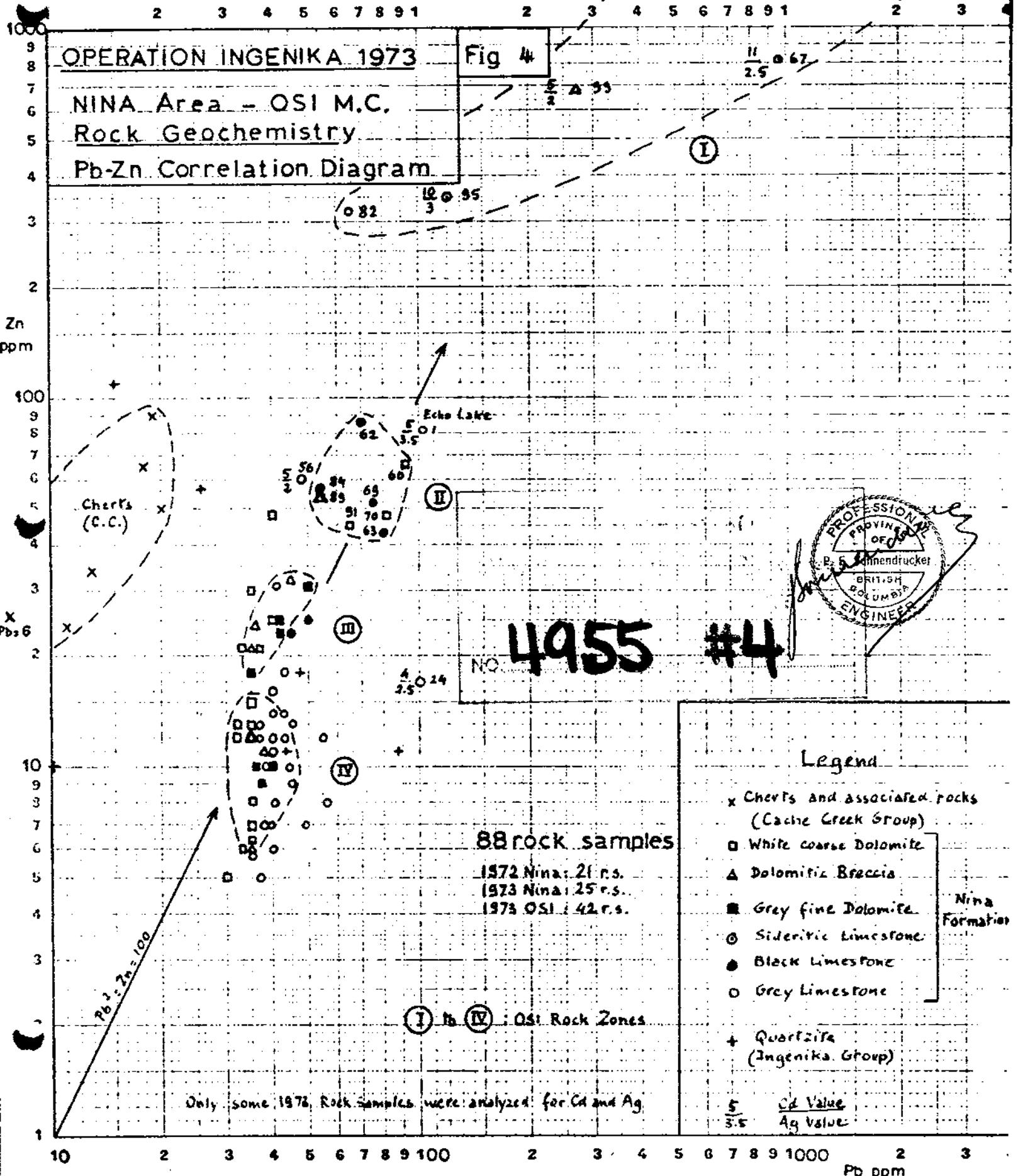
Rem: During a geochemical prospecting for Pb-Zn stratiform deposit in France and by using Pb-Zn correlation diagram, CACHAU-HEREILLAT (1969) showed a statistical correlation between Pb and Zn in rocks, like  $\log \text{Zn}/\log \text{Pb} = 2$ . For him, the correlation  $\text{Pb}^2/\text{Zn} = K$  points to deposition under concentration factors, involving syngenetic processes.

The same type of correlation appears for the "normal" carbonate rocks on OSI GROUP, dolomitized or not.

Zn: 2100  
 269  
 50  
 56  
 Zn: 1920  
 2.5  
 97  
 Zn: 1750  
 2.5  
 98

**OPERATION INGENIKA 1973**  
**NINA Area - OSI M.C.**  
**Rock Geochemistry**  
**Pb-Zn Correlation Diagram**

Fig 4



NO. 4955 #4

88 rock samples  
 1972 Nina: 21 r.s.  
 1973 Nina: 25 r.s.  
 1973 OSI: 42 r.s.

- Legend**
- x Cherts and associated rocks (Cache Creek Group)
  - White coarse Dolomite
  - △ Dolomitic Breccia
  - Grey fine Dolomite
  - Sideritic Limestone
  - Black Limestone
  - Grey Limestone
- } Nina Formation
- + Quartzite (Ingenika Group)
- 5  
3.5 Cd Value  
Ag Value

① to ④ : OSI Rock Zones







Only some 1973 Rock samples were analyzed for Cd and Ag.

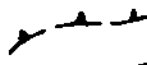
Fig 3


OPERATION INGENIKA 1973

OSI M.C. Group

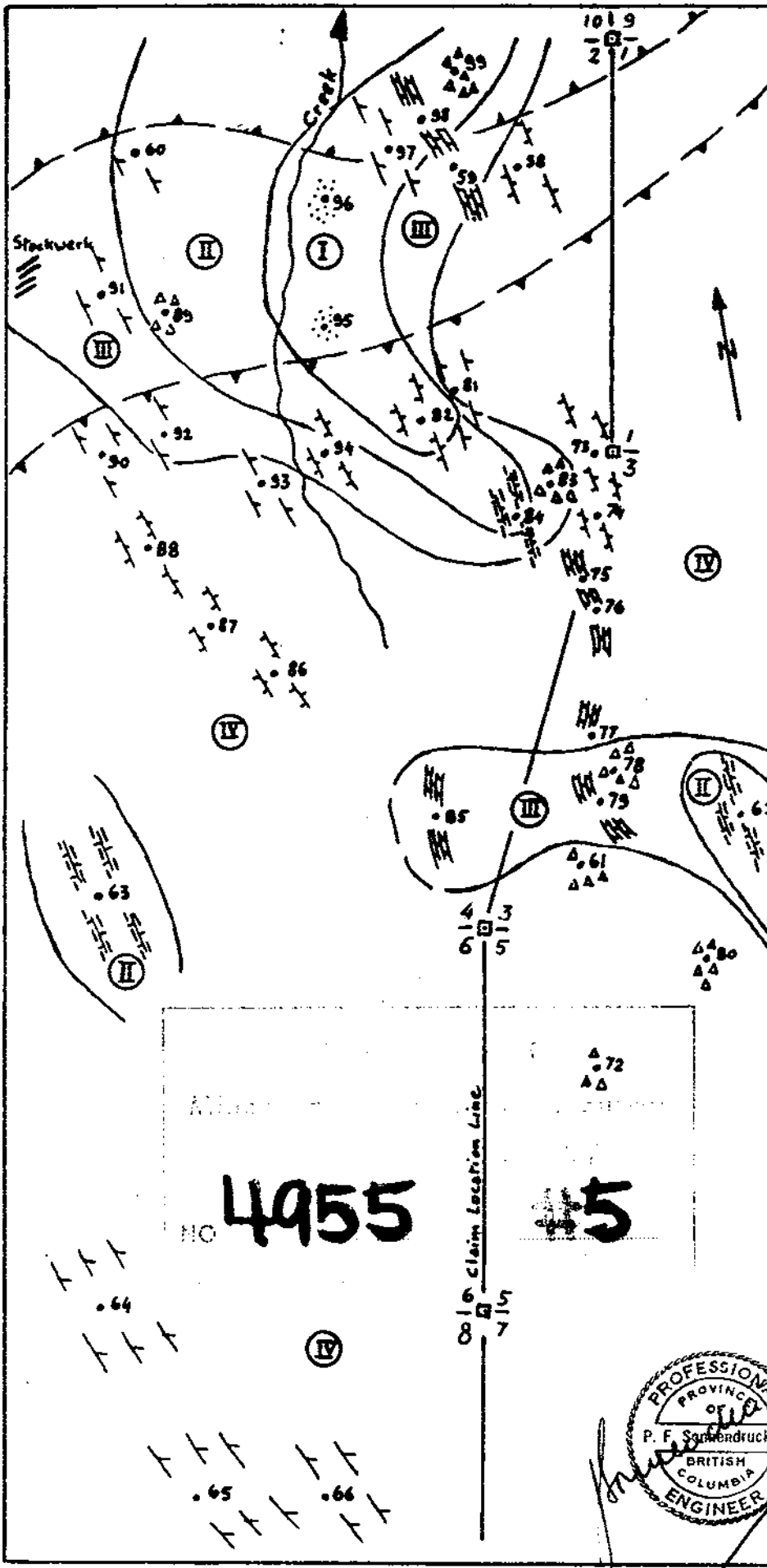
PbZn Zoning in Rocks

-  Sideritic Limestone
-  Coarse white dolomite
-  Grey Dolomite Breccia
-  Fine grey Dolomite
-  Black Limestone
-  Grey Limestone

 Soil geochemical anomaly

 I, II, III, IV Rock Zones  
• 61 Rock Sample

Approx. Scale: 1" = 500'



NO 4955



OSI Rock geochemistry

Rock type	Number or No RP.	Pb ppm	Zn ppm
Grey aphanitic limestone	7 samples 94 82	37-45 41 65	7-14 31 325
Black aphanitic limestone	4 samples	54-80	43-87
Finely crystalline grey dolomite	5 samples 68 98	35-42 51 550	9-25 31 1750
Breccia of fine grey dol. clasts in a coarse white dol. matrix	5 samples 89 99	35-48 54 275	6-24 57 680
Coarsely crystalline white dolomite	8 samples 91 70 60 97	32-40 65 82 92 600	7-25 45 48 66 1920
Sideritic limestone	95 67	120 950	350 830
Oxydized mineralized	96	95000	425000

8. CONCLUSION AND RECOMMENDATIONS

Geochemical soil survey has outlined an extensive anomalous zone on OSI GROUP (3000' x 200-400'). Rock geochemistry seems useful for indicating the mineralized zone in this carbonate formation.

SEREM LTD plans a sampling program by trenching and perhaps drilling during the 1974 field season.



ANNEXE I

Statement of expenses.

The following is a breakdown of expenses incurred in carrying out the work on the OSI GROUP in June and August 1973:

Field work

Personel: P. SONNENDRUCKER	June 4 - 5		
Senior Geologist	August 18 - 21	6 days	\$ 420.00
JAMES PETURA	June 20 - 30		
Junior Geologist	August 17 - 23	18 days	\$ 720.00
KENNETH GRIFFITH	June 20 - 30	11 days	\$ 275.00
Soil sampler			
CHARLES CARON	August 17 - 23	7 days	\$ 210.00
Soil sampler			

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\$ 1625.00

Food expenses: (\$6.00/man/day) 42 days \$ 252.00

Helicopter support: (\$260.00/h.) 2 hours \$ 520.00

Geochemistry: Assaying (V.G.C.)  
Soils: 714 samples at \$1.65 each \$ 1178.10

Rocks: 42 samples at \$3.95 each \$ 165.90

Office work

Personel: P. Sonnendrucker  
Interpretation, writing 10 days \$ 700.00

J. Petura  
Drafting 10 days \$ 400.00

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TOTAL ..... \$ 4841.00  
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Declared before me at the City  
of Vancouver, in the  
Province of British Columbia, this 15th  
day of May, 1974, A.D.

*Jean Paul* SUB-MINING RECORDER

ANNEXE II

STATEMENT OF QUALIFICATIONS

I, PIERRE F. SONNENDRUCKER, with business address in VANCOUVER, B.C., hereby certify that:

1. I am a registered Professional Engineer in the Province of British Columbia;

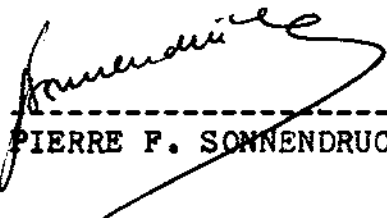
2. I am a graduate of the University of NANCY, FRANCE, with the diploma of Geological Engineer of the "Ecole Nationale Supérieure de Geologie Appliquée et de Prospection Minière" (Ingenieur-Geologue ENSG, Promotion 1954);

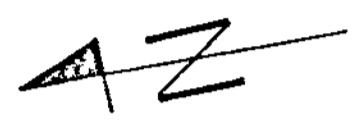
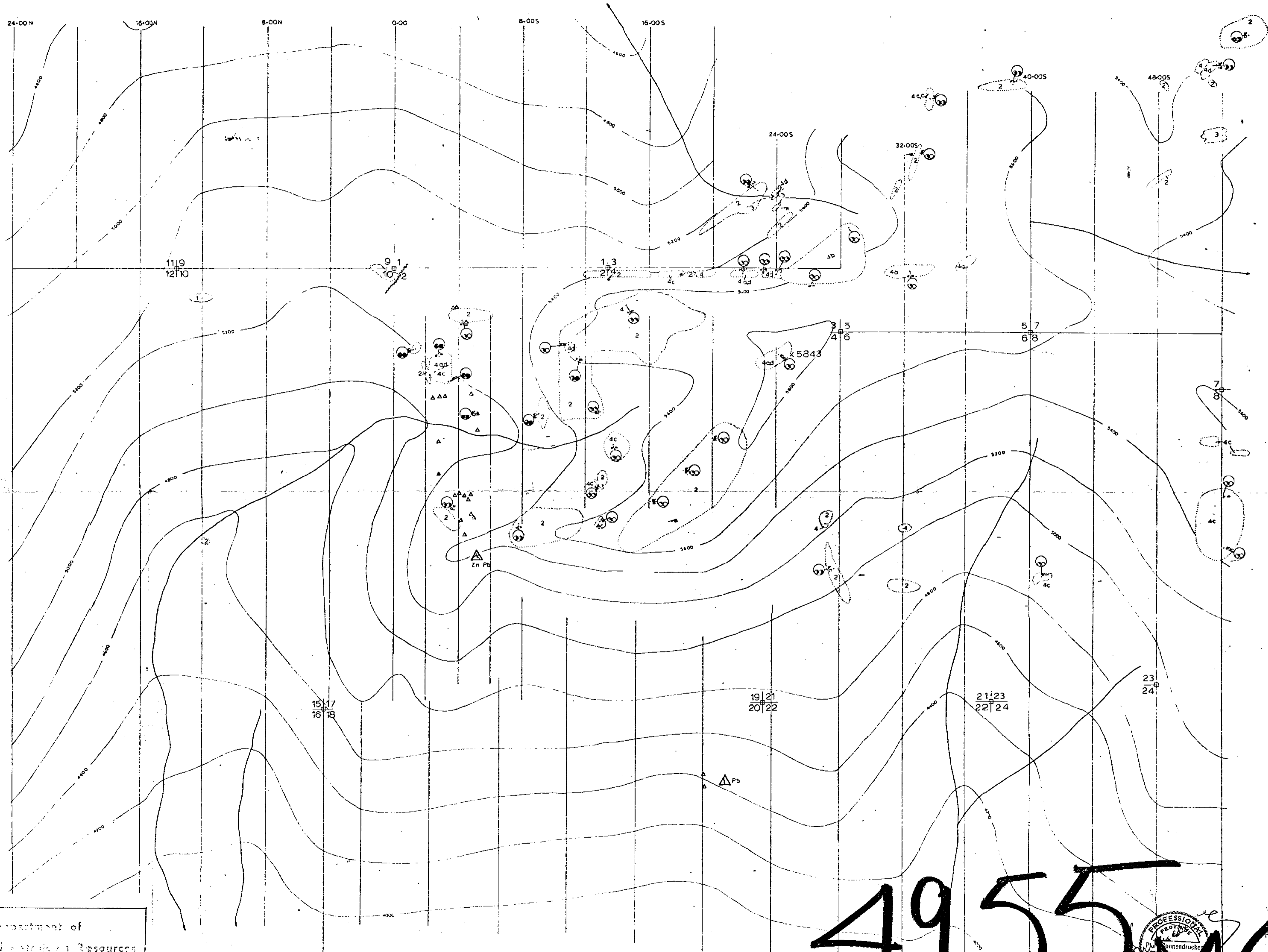
3. I have practised as a Geologist since 1957 in West Africa (Ivory Coast, Guinea), France and Canada (British Columbia);

4. I am employed by SEREM Ltd, 770-2100 Drummond Street, MONTREAL 107, Quebec, as a Senior Geologist. My residential address is 2021 West 59th Avenue, VANCOUVER 14, B.C.;

5. I have personally participated in the field work and supervised all the completed work included in this report. I have interpreted the data resulting from this work.

Respectfully submitted,

  
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PIERRE F. SONNENDRUCKER



MAP ①

SEREM LTD

1973 OPERATION INGENIKA

OSI CLAIM GROUP

ROCK GEOCHEMISTRY

	Pb	Zn
○	< 25 ppm	< 20 ppm
○	25-49 ppm	20-39 ppm
○	50-99 ppm	40-79 ppm
○	100-199 ppm	80-159 ppm
●	200-999 ppm	160-799 ppm
■	> 1000 ppm	> 800 ppm

GEOLOGY

- 4 DOLOMITE; a) massive, b) breccia, c) coarse crystalline, d) finely crystalline
- 3 BLACK LIMESTONE & ARGILLITE
- 2 LIMESTONE
- 1 SCHISTOSE BLACK ARGILLITE

- △ Mineral occurrence in float
- △ Fracture filling (massive like in outcrop)
- △ Fracture filling (massive like in outcrop)

Department of  
Mineral and Petroleum Resources

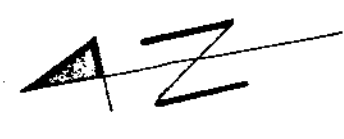
A FINDER REPORT

NO. **4955** M.P. #**16**

SCALE (1:25000)

4955 M16





11  
12



MAP ②

SEREM LTD

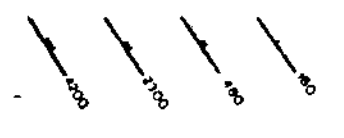
1973 OPERATION INGENIKA

OSI CLAIM GROUP

Pb GEOCHEMICAL RESULTS

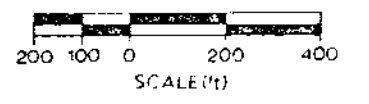
SOIL SURVEY

LEAD ISOVALE LINES (ppm)



ROCK SURVEY

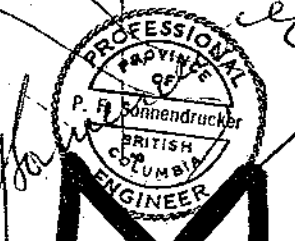
- < 25 ppm
- 25 - 49 ppm
- 50 - 99 ppm
- 100 - 199 ppm
- 200 - 999 ppm
- > 1000 ppm



N/S: 93 N/15, 94 C/2  
1973, December 1973  
Scale 1:500

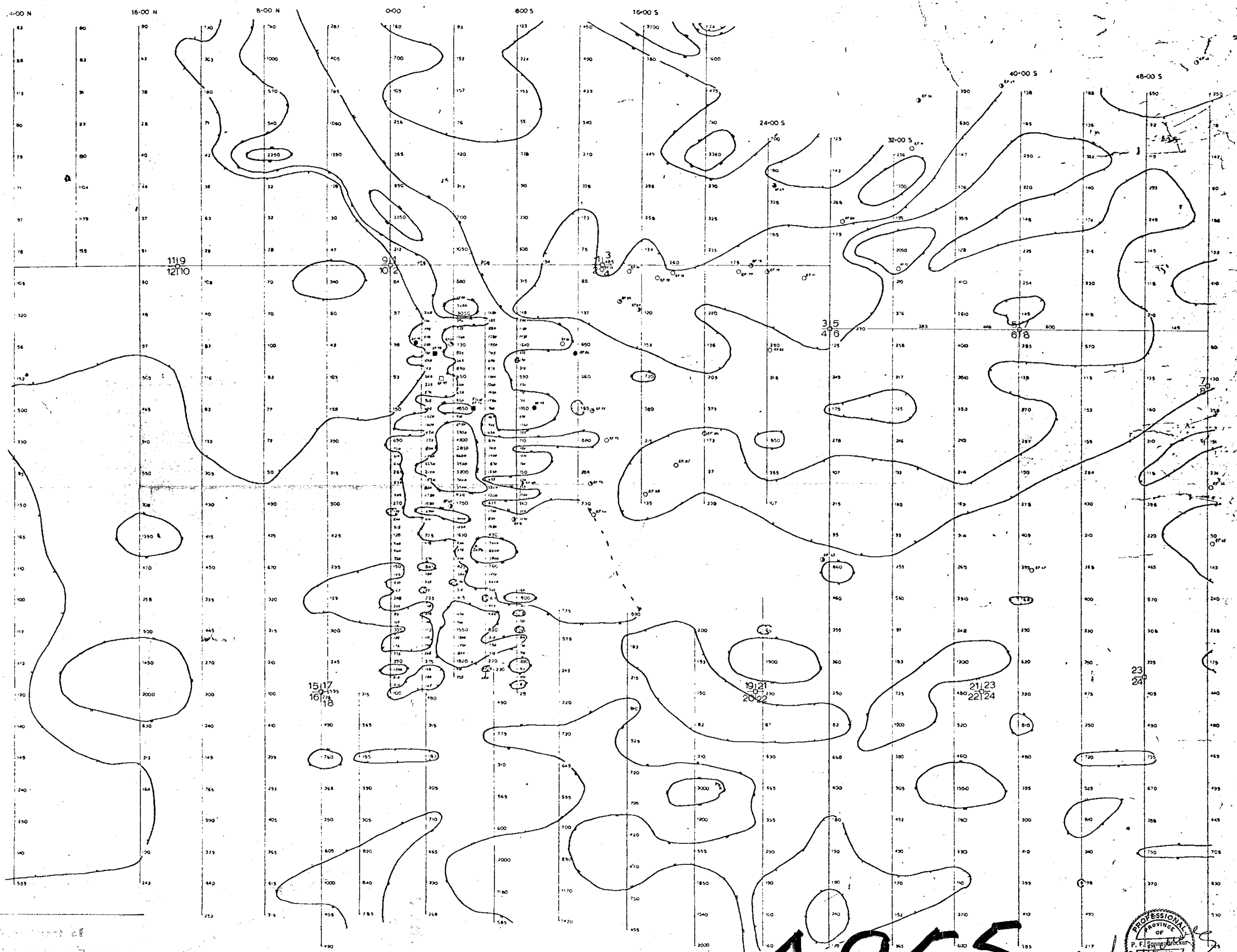
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NO. 4955 MAP #7

4955 M7



AZ

11  
12



MAP ③

SEREM LTD

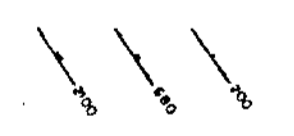
1973 OPERATION INGENIKA

OSI CLAIM GROUP

Zn GEOCHEMICAL RESULTS

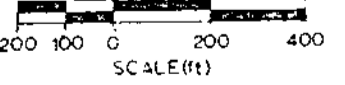
SOIL SURVEY

ZINC ISOVALUE LINES (ppm)



ROCK SURVEY

- < 20 ppm
- 20-39 ppm
- 40-79 ppm
- 80-159 ppm
- 160-799 ppm
- > 800 ppm



NTS: 93N/15. 1:12  
 Date: November 1973  
 Drawn by: JF

Department of  
 Mines and Technical Resources  
 ASSESSMENT REPORT  
 NO. 4955 MAP #8

4955 M8

