PETER E. WALCOTT & ASSOC. LTD.

A GEOPHYSICAL REPORT

ON

AN INDUCED POLARIZATION SURVEY

Tutshi Lake Area, British Columbia
59° 50' N, 134°, 30' W
N. T. S. 104 M/15

Claims surveyed: CATFISH 2, 3, 6, 7, 10 & 11

Survey Dates: September 6th - October 2nd, 1989

Owners: Frame Mining Corporation
C. J. R. Hart

Operator: FRAME MINING CORPORATION

BY

PETER E. WALCOTT & ASSOCIATES LIMITED
Vancouver, British Columbia

JANUARY 1990

GEOPHYSICAL SERVICES

TABLE OF CONTENTS

APPENDIX

INTRODUCTION.

Between September 6th and October 2nd, 1989, Peter E. Walcott & Associates Limited carried out limited induced polarization (I.P.) surveying on part of the Catfish property, located in the Tutshi Lake area of British Columbia, for Frame Mining Corporation.

The survey was carried out over two baselines, one at N 15° W, the other at N 40° W, and five cross lines, two of which were turned off at right angles from the first baseline, and the remainder similarily turned off the second baseline, that were established by a linecutting contracting crew.

Measurements (first to fourth separation) of apparent chargeability - the I.P. response parameter - and resistivity were initially taken using the dipole-dipole method of surveying with a 25 metre dipole, but were discarded in favour of those from the pole-dipole method of surveying when the former method had to be abandoned due to poor electrical contact with the ground, the very steep and slippery terrain, and the incessant rain.

As expected the progress of the survey was severely impeded by the above noted conditions, three camp set ups, and suffered a further setback when a large windstorm blew down the camp and damaged the transmitter in the middle of the job which necessitated a replacement being flown in.

The I.P. data are presented in pseudo section form on individual line profiles that are bound in this report.

PROPERTY, LOCATION & ACCESS.

The property is located in the Atlin Mining Division of British Columbia and consists of the following claims:

Claim Name	Units	Record No.	Anniversary Date
CATFISH	4	2640	June 24th
" 2	2	2755	October 30th,
" 3	3	2756	October 30th,
" 4	2	2757	October 30th,
" 5	15	3116	March 4th,
" 6	8	3117	March 4th,
" 7	20	3118	March 4th,
" 10	4	3433	September 2nd,
" 11	6	3434	September 3rd,
IGUANA	12	3100	January 5th.

The claims are situated on the west side of Tutshi Lake between elevations of 700 and 2000 metres in the vicinity of Paddy Pass.

Access to the property was obtained by means of a four wheel drive vehicle along an access road, north of Paddy Creek, running off the Klondike Hwy. some 50 kilometres north of Skagway, Alaska.

Helicopter assistance was needed to (a) move the gear up the mountain for work off the north baseline, and (b) move the entire camp to the southern portion of the claims for work off the south baseline.

PREVIOUS WORK.

Previous work on the property consisted for the most of mapping and prospecting, as evidenced by the presence of adits, trenches and blast holes as well as by the access road, and is largely undocumented.

PURPOSE.

The purpose of the survey was to determine the I.P. response of the sulphide bearing quartz veins in an effort to use these responses, if any, to trace and/or search for more of the same in the overburden covered areas.

GEOLOGY.

The reader is referred to a report by J. H. Davis, P. Geol. dated December 1989.

Basically the property is underlain by a sequence of volcanic and sedimentary rocks of Pre=-Permian - Boundary Ranges Group -, Upper Triassic - Stuhini Group -, Lower Jurassic - Laberge Group - and Middle to Upper Jurassic periods in a large anticlinal synclinal structure, intruded in places by granite and aplite rocks of Upper Cretaceous Coast Intrusions, that trends N 50° W.

Mineralization occurs primarily on east-west trending quartz-arsenopyrite veins up to 2.5 metres wide with anomalous gold and silver values within the aplite on the middle ridge, and as disseminated pyrite in the orange-buff gossanous areas of the aplite.

SURVEY SPECIFICATIONS.

The induced polarization (I.P.) survey was carried out using a pulse type system, the principal components of which are manufactured by Huntec Limited and EDA Instruments Ltd. of Metropolitan Toronto, Ontario.

The system consists basically of three units, a receiver (EDA), a transmitter and a motor generator (Huntec). The transmitter, which provided a maximum of 2.5 kw d.c. to the ground, obtains its power from a 2.5 kw 400 c.p.s. three phase alternator driven by a gasoline engine. The cycling rate of the transmitter is 2 seconds "current-on" and 2 seconds "current-off" with the pulses reversing continuously in polarity. The data recorded in the field consists of careful measurements of the current (I) in amperes flowing through the current electrodes C_1 and C_2, the primary voltage (V) appearing between the two potential electrodes, P_1 and P_2, during the "current-on" part of the cycle, and the apparent chargeability (M_a) presented as a direct readout in millivolts per volt using a 160 millisecond delay and a 1580 millisecond sample window by the receiver, a digital receiver controlled by a micro-processor.

The apparent resistivity (P_a) in ohm metres is proportional to the ratio of the primary voltage and the measured current, the proportionality factor depending on the geometry of the array used. The chargeability and resistivity are called apparent as they are values which that portion of the earth sampled would have if it were homogeneous. As the earth sampled is usually inhomogeneous the calculated apparent chargeability and resistivity are functions of the actual chargeability and resistivity of the rocks.

The dipole-dipole method of surveying was deployed initially. This electrode configuration and the methods of presenting the results are illustrated on the pseudo-sections in the appendix. Depth penetration with this array is increased or decreased by increasing or decreasing "a" and/or "n".

In practise, the equipment is set up at a particular station of the line to be surveyed: three transmitting dipoles are laid out to the rear, measurements are made for all possible combinations of transmitting and receiving dipoles, up to the fourth separation, i.e. n=4: the equipment is then moved 3

SURVEY SPECIFICATIONS cont'd

"a" metres along the line to the next set-up.

A decision was made to abandon this system of surveying when poor contact resistance resulted in the inability to transmit sufficient current to the ground to obtain reliable measurable overvoltage readings, and to switch to the "pole-dipole" method of surveying. This decision was further reinforced by the steep and slippery terrain - could not pack the 44 kg motor generator up some slopes - and the inclement weather.

In this method the current electrodes C_1, and the potential electrodes, P_1 through P_3, are moved in unison along the survey lines at a spacing "a" (the dipole) apart, while the second current electrode C_2 is kept constant at "infinity". The distance, "na", between C_1 and the nearest potential electrode generally controls the depth to be explored by the particular separation, "n", traverse.

The survey was carried out using a 25 metre dipole, and first to fourth separation measurements were made at 25 metre intervals along the lines.

In all some 10.4 kilometres of surveying were carried out using the above methods.

DISCUSSION OF RESULTS.

The chargeability results show the area surveyed to exhibit a low chargeability background - 3 to 7 millivolts per volt - above which many anomalous features are clearly discernible.

These can be basically broken into three classes based on their respective characteristics, namely Class A- narrow zones of higher chargeability with little or no resistivity contrast as would be expected from narrow veinlike causative sources -, Class B - apparently narrow but undefined zones of high chargeability associated with lower resistivities- and Class C - broad complex zones of higher chargeability with little or no resistivity contrast.

High chargeability readings accompanied by lower resistivity values of Class B type are observed on the western extremities of Lines 0, 1125 S and 1325 S as well as on the southern end of the baseline. To the writer these would appear to represent the response of carbonaceous argillites although they generally appear west of the mapped occurrence of such.

A large complex zone of high chargeability of Class C type is observed on the eastern end of Line 0, the eastern half of Line 400 N, undefined to the east on both lines, the central portion of Line 800 N and on the baseline between 3 + 50 N and 9 + 00 N between similar elevations on all lines. This would appear to have a formational causative source, but is located mostly in mapped intrusive with extension into the Boundary Range metamorphics on Line 0.

Higher chargeability readings occur on the smaller separations within this zone on Line 800 N where the hillside appears to have sloughed down to create a layer of mineralized talus.

A zone of similar characteristics is noted on the western end of Line 1325 S in the mapped Jurassic sedimentary-volcanic suites, and a similar one could occur at depth in the middle of the same line.

The majority of the Class A type of anomalies occur on the two baselines in areas of good rock exposure where

DISCUSSION OF RESULTS cont'd

the lines run mostly parallel to a shear(s) and over cross cutting quartz-arsenopyrite veins - it should be mentioned here that some first separation measurements were omitted in areas of lower chargeabilities due to excessive primary voltage signal strength.

The broadest of these anomalies, located with the aborted dipole-dipole work between Lines 9 + 50 S and 7 + 75 S on the baseline, exhibits somewhat similar chargeability and resistivity responses to the above mentioned anomalies on Line 1325 S.

A strong single dipole anomaly was observed in the overburden covered area on the north side of the Paddy Creek valley bottom, as defined by lower resistivities.

SUMMARY, CONCLUSIONS & RECOMMENDATIONS.

Between September 6th and October 2nd, 1989, Peter E. Walcott & Associates Limited undertook a limited induced polarization survey to investigate the chargeability signature of the known mineralized gold bearing veins on the Catfish property, located in the Tutshi Lake area of British Columbia, for Frame Mining Corporation.

Despite initial start-up problems, occasioned mostly by the steep terrain and inclement weather, seven traverses were completed on a split baseline and five cross lines.

Moderate to strong chargeability responses were observed over the known vein structures, and similar responses were obtained elsewhere in areas of good rock exposure for future geological correlation.

A large complex zone of moderate to strong chargeability was located on the south hillside of the Paddy Creek valley on lines 400 metres apart in mostly underlying Coast Intrusions.

While the geological map provided shows no outcroppings nor geochemical coverage over this zone there are presumably occurrences of the former in the numerous drainage channels that run down the hillside as per the topographic maps for geological investigation of the causative source(s) of this anomalous zone.

As a result the writer recommends that the geophysical data be studied in conjunction with the results from the geological and geochemical investigations before further work is contemplated.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED

Peter E. Walcott, P.Eng.
Geophysicist

Vancouver, B.C.
January 1990

A P P E N D I X

COST OF SURVEY.

Peter E. Walcott & Associates Limited undertook the survey on a daily basis. Mobilization and reporting costs were extra so that the total cost of services provided was $35,899.43.

PERSONNEL EMPLOYED ON SURVEY.

Name	Occupation	Address	Dates
Peter E. Walcott	Geophysicist	Peter E. Walcott & Assoc. 605 Rutland Court, Coquitlam, B.C. V3J 3T8	Dec. 14th, 1989 Jan 26th - 30th 1990
G. MacMillan	Geophysical Operator	"	Sept. 8th - Oct. 3rd, 26th - 30th, 1989
I. Franey	"	"	Sept. 6th - 30th, 1989
P. Storkle	Geophysical Helper	"	"
M. Hawley	"	"	Sept. 8th - 11th, 1989
C. Rousseau	"	"	Sept. 12th - 29th, 1989
B. Bennion	"	"	Sept. 22nd - 30th, 1989
J. Walcott	Typing	"	Jan. 30th, 1990

CERTIFICATION.

I, Peter E. Walcott, of the Municipality of Coquitlam, British Columbia, hereby certify that:

1. I am a graduate of the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.

2. I have been practising my profession for the last twenty seven years.

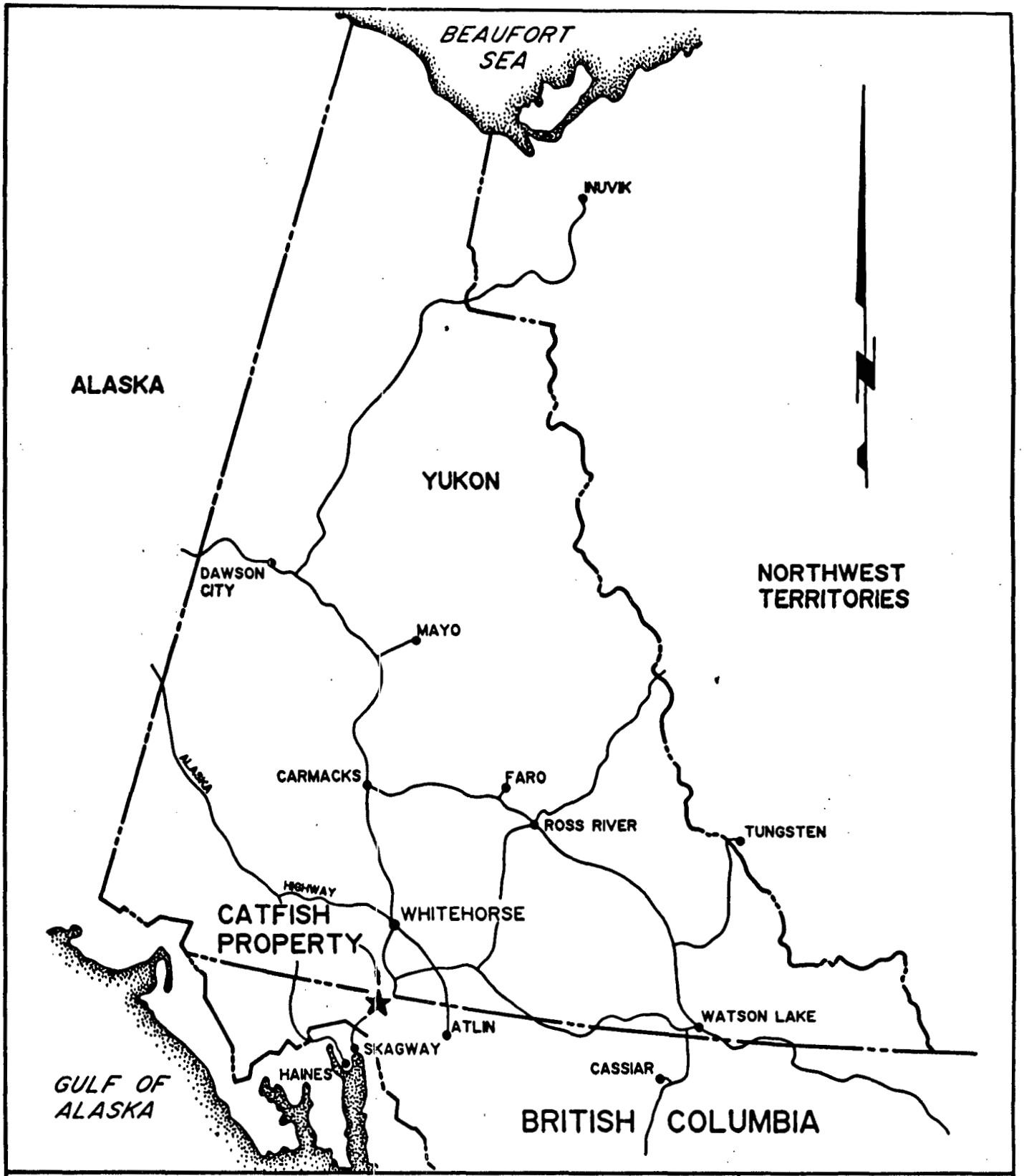
3. I am a member of the Association of Professional Engineers of British Columbia and Ontario.

4. I hold no interest, direct or indirect, in the securities or properties of Frame Mining Corporation, nor do I expect to receive any.

Peter E. Walcott, P.Eng.

Vancouver,
British Columbia

January 1990



FRAME MINING CORPORATION

CATFISH PROJECT

FIGURE 1 - LOCATION MAP

0 50 100 200 300 400

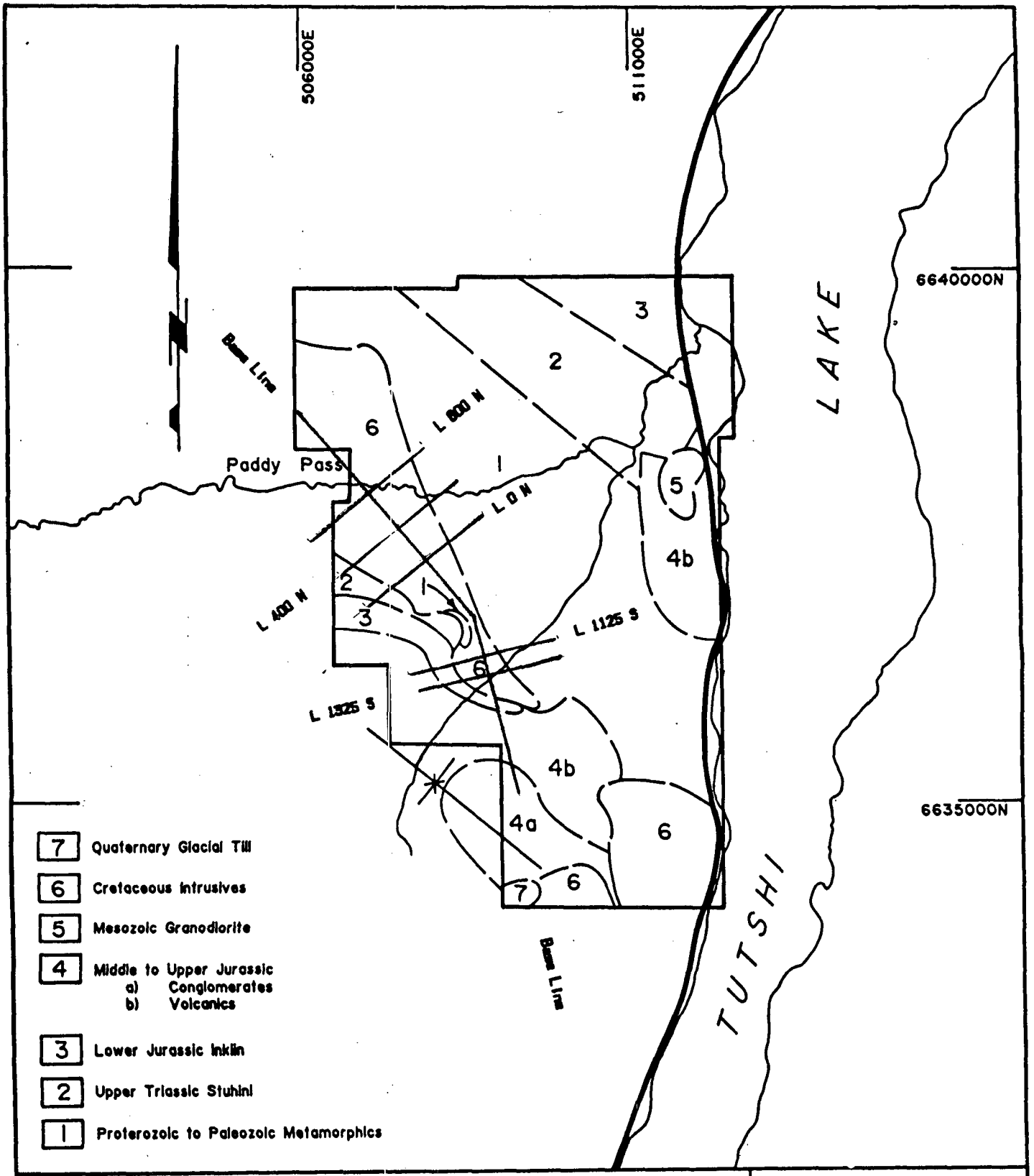
SCALE IN KILOMETRES

PETER E. WALCOTT & ASSOC. LTD.

December 1989

DATE : SEPTEMBER 1989

DRAWN BY : SONYA HANSEN



FRAME MINING CORPORATION

CATFISH PROJECT

FIGURE 2 - PROPERTY GEOLOGY

SCALE 1 : 50000

METRES 1000 0 1000 2000 3000 4000 METRES

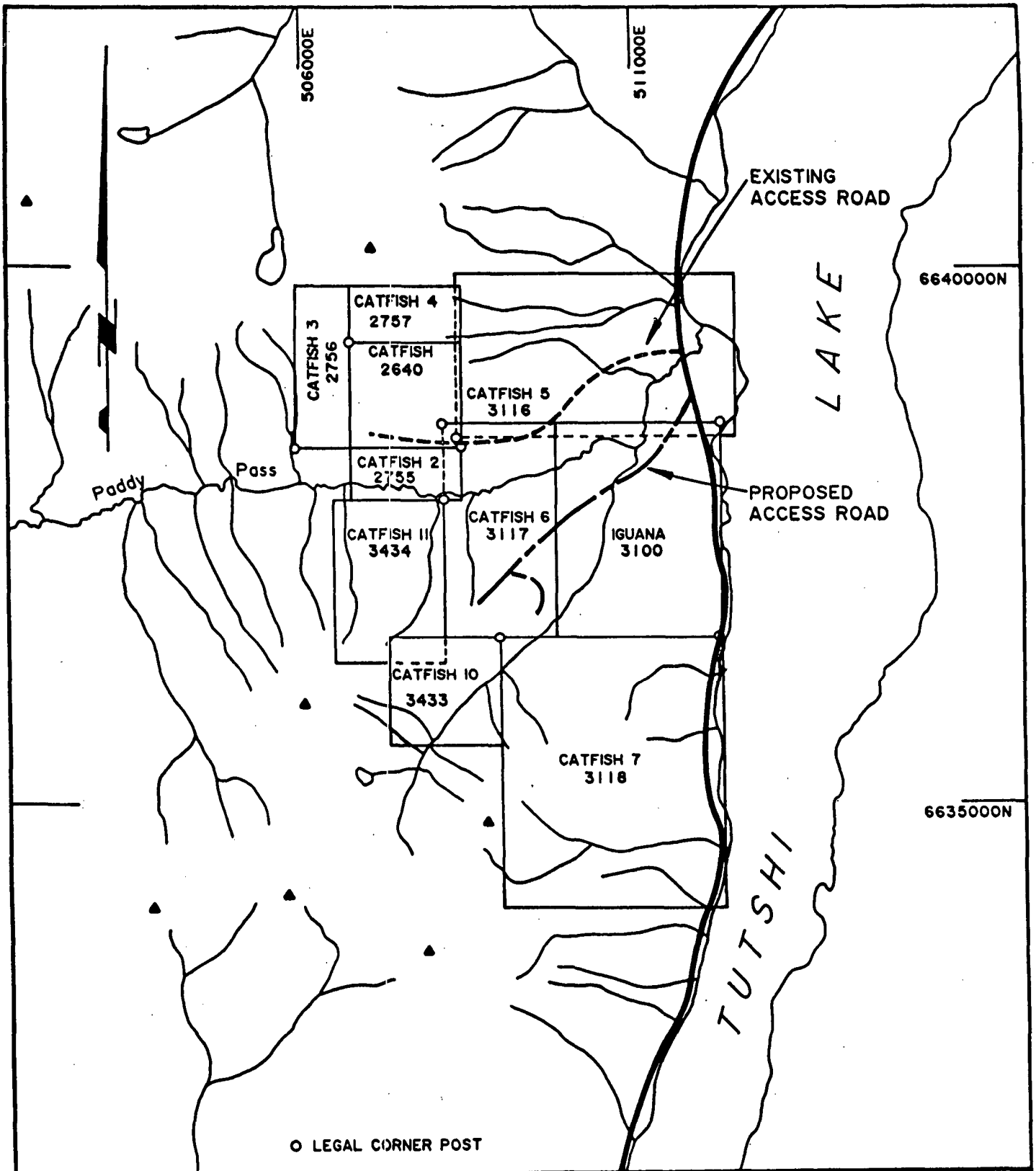
PETER E. WALCOTT & ASSOC. LTD.

December 1989

GEOLOGY BY : J. H. DAVIS
CONSULTING
GEOLOGIST

DATE : SEPTEMBER 1989

DRAWN BY : SONYA HANSEN



FRAME MINING CORPORATION

CATFISH PROJECT

FIGURE 3 - 1989 EXPLORATION CLAIM MAP

SCALE 1 : 50000

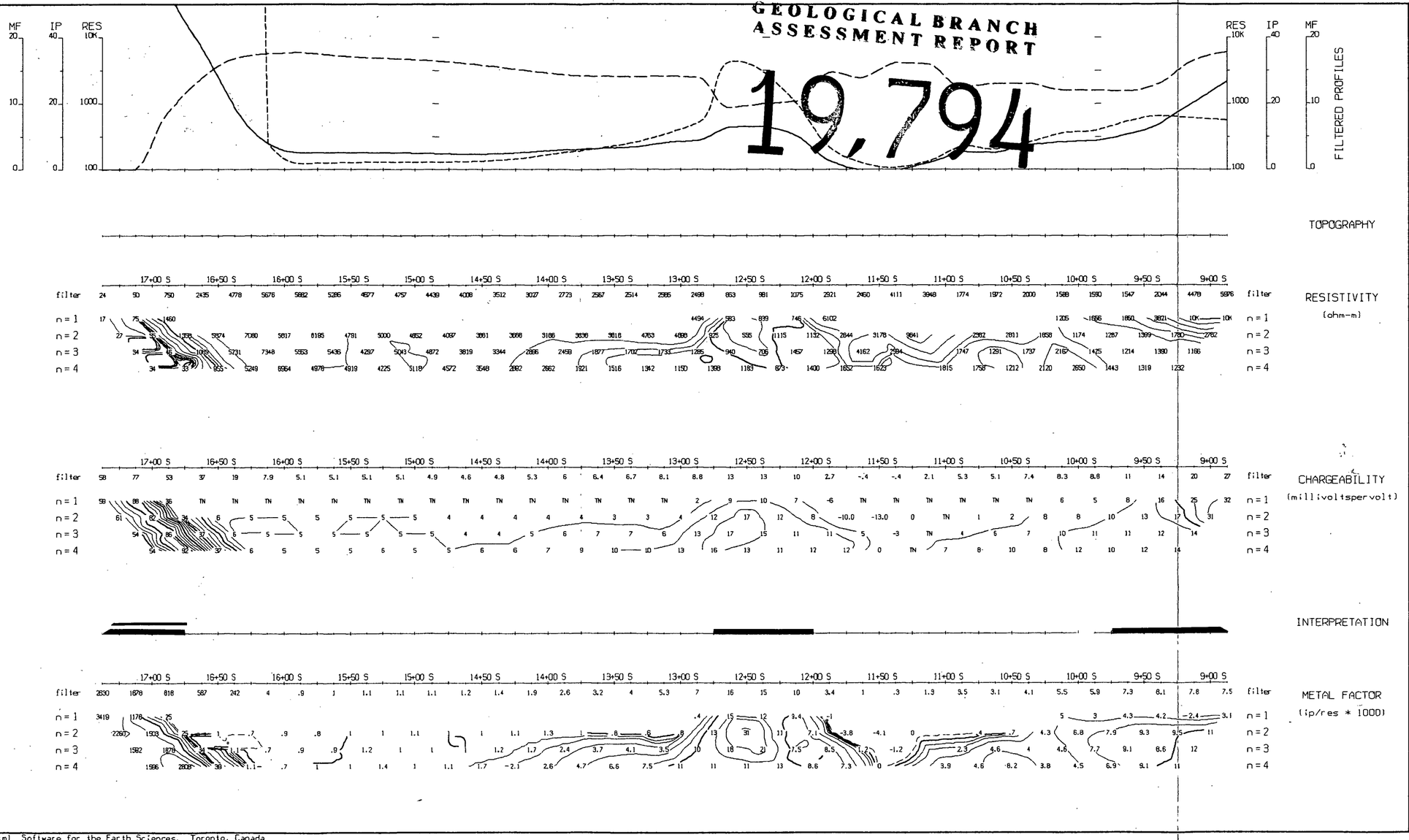
METRES 1000 0 1000 2000 3000 4000 METRES

PETER E. WALCOTT & ASSOC. LTD.

December 1989

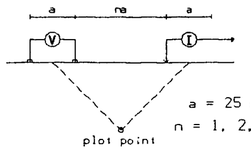
DATE : SEPTEMBER 1989

DRAWN BY : SONYA HANSEN



Base Line 0

Dipole-Pole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M..I.F.

INTERPRETATION

Well defined, strong increase in polarization with or without marked decrease in resistivity.

Fairly well defined moderate increase in polarization.

Poorly defined polarization increase.

Resistivity feature.

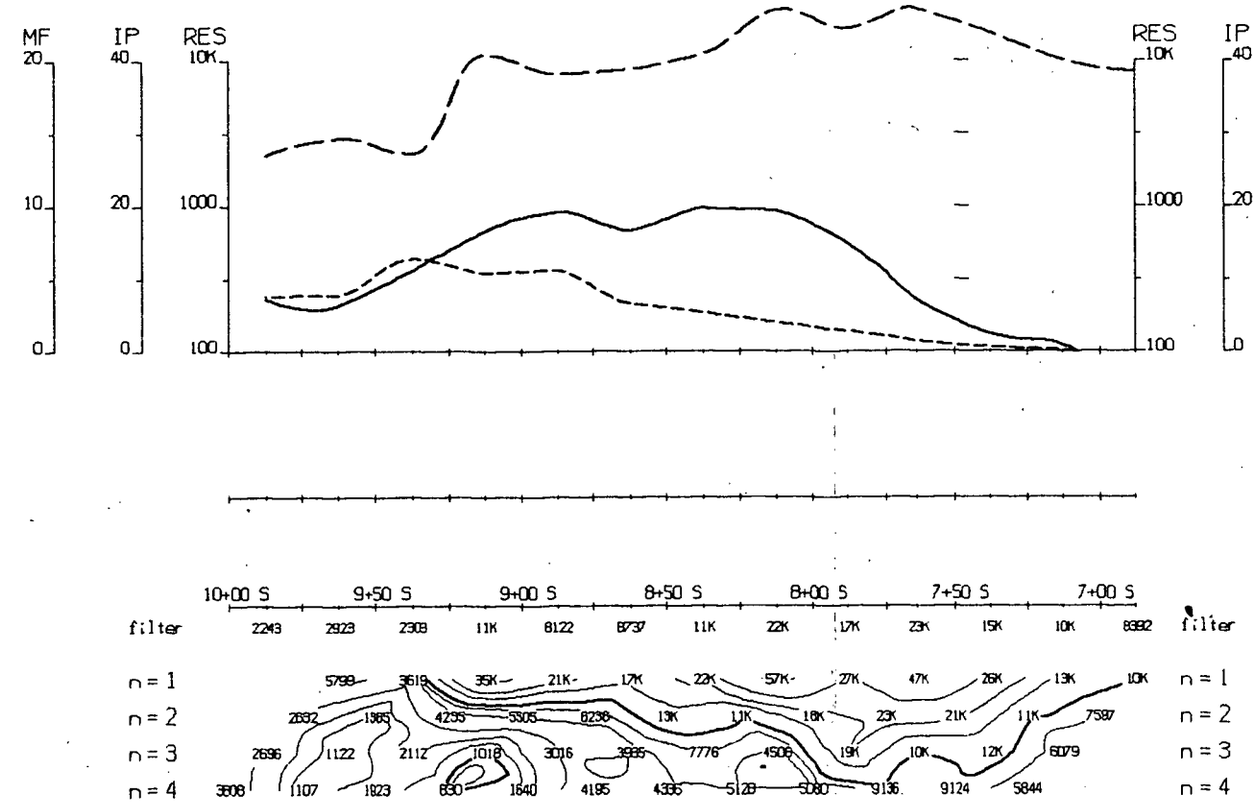
FRAME MINING CORPORATION

INDUCED POLARIZATION SURVEY

CATFISH PROJECT
LIARD M.D.,B.C.

Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

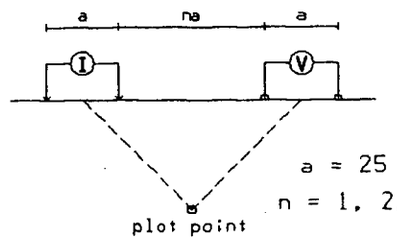
PETER E. WALCOTT & ASSOC. LTD.



GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada

Base Line 0

Dipole-Dipole Array



a = 25 m
n = 1, 2, 3, 4

Filtered Profiles

		filter
Resistivity	————	*
Polarization	————	* *
Metal Factor	- - - - - - - -	* * *
		* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M.,I.F.

INTERPRETATION

Well defined, strong increase in polarization with or without marked decrease in resistivity.

Fairly well defined moderate increase in polarization.

Poorly defined polarization increase.

Resistivity feature.

FRAME MINING CORPORATION

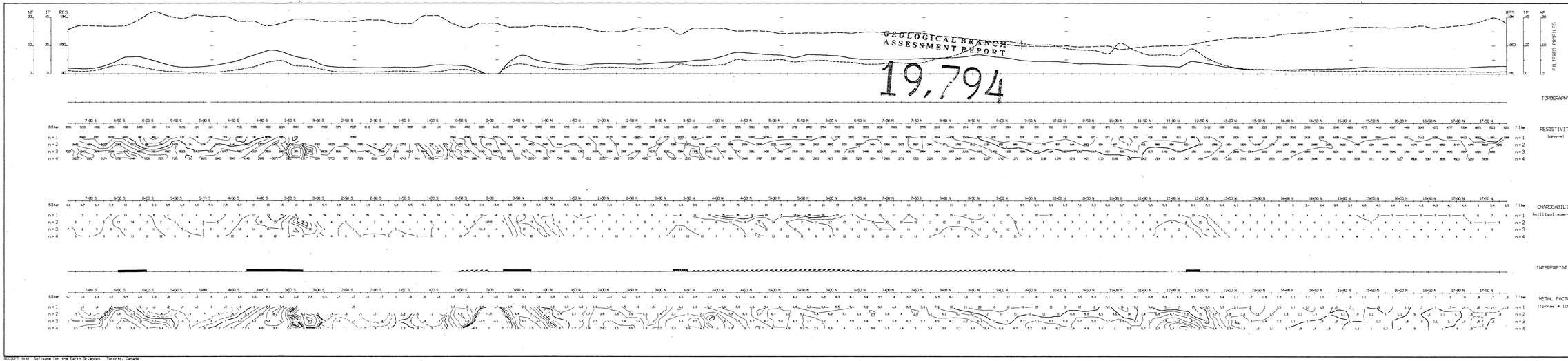
INDUCED POLARIZATION SURVEY

CATFISH PROJECT

LIARD M.D.,B.C.

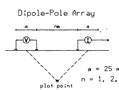
Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.



Base Line 0

Dipole-Pole Array



Filtered Profiles

Resistivity
Polarization
Metal Factor

filter
*
**
***
****

Logarithmic
Contours 1, 1.5, 2, 3, 5, 7.5, 10....

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M.I.F.

INTERPRETATION

Well defined, strong increase in polarization with or without marked decrease in resistivity.

Fairly well defined moderate increase in polarization.

Poorly defined polarization increase.

Resistivity feature.

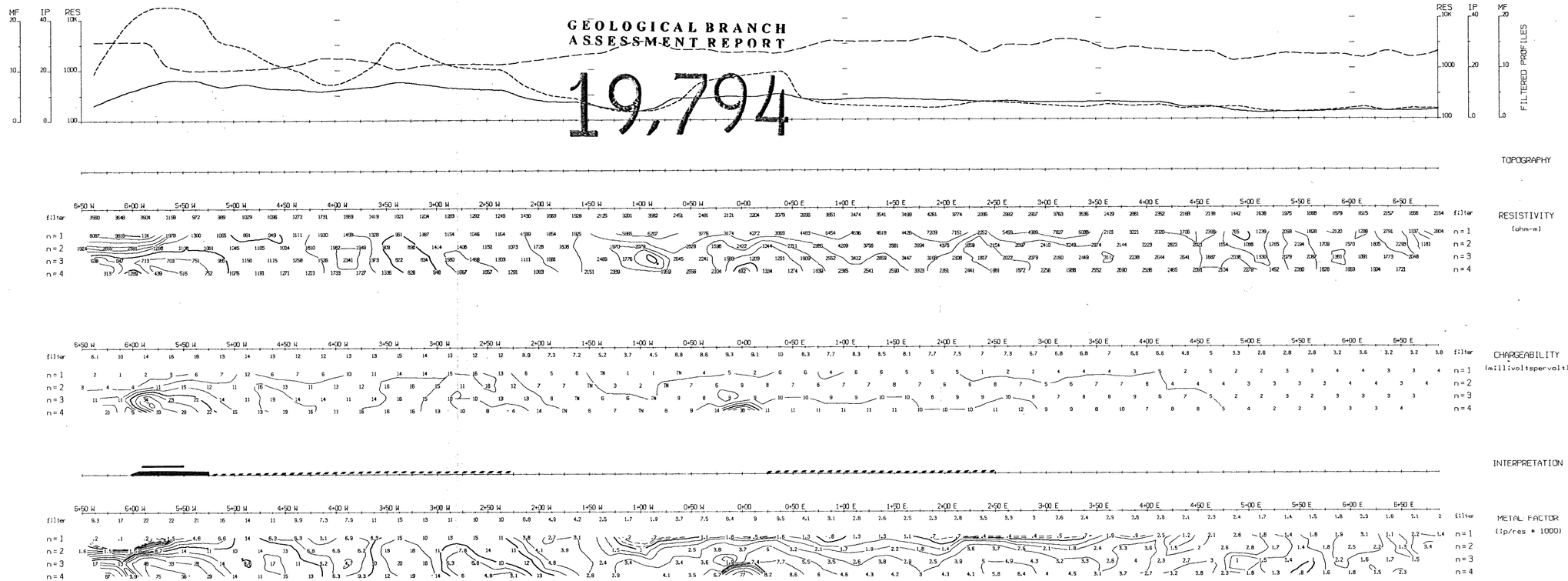
FRAME MINING CORPORATION

INDUCED POLARIZATION SURVEY

CATFISH PROJECT
LIARD M.D.,B.C.

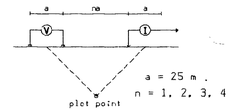
Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.



Line 1325 S

Dipole-Pole Array



a = 25 m .
n = 1, 2, 3, 4

Filtered Profiles

Resistivity
Polarization
Metal Factor

filter
*
* *
* * *
* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M..I.F.

INTERPRETATION

Well defined, strong increase in polarization with or without marked decrease in resistivity.

Fairly well defined moderate increase in polarization.

Poorly defined polarization increase.

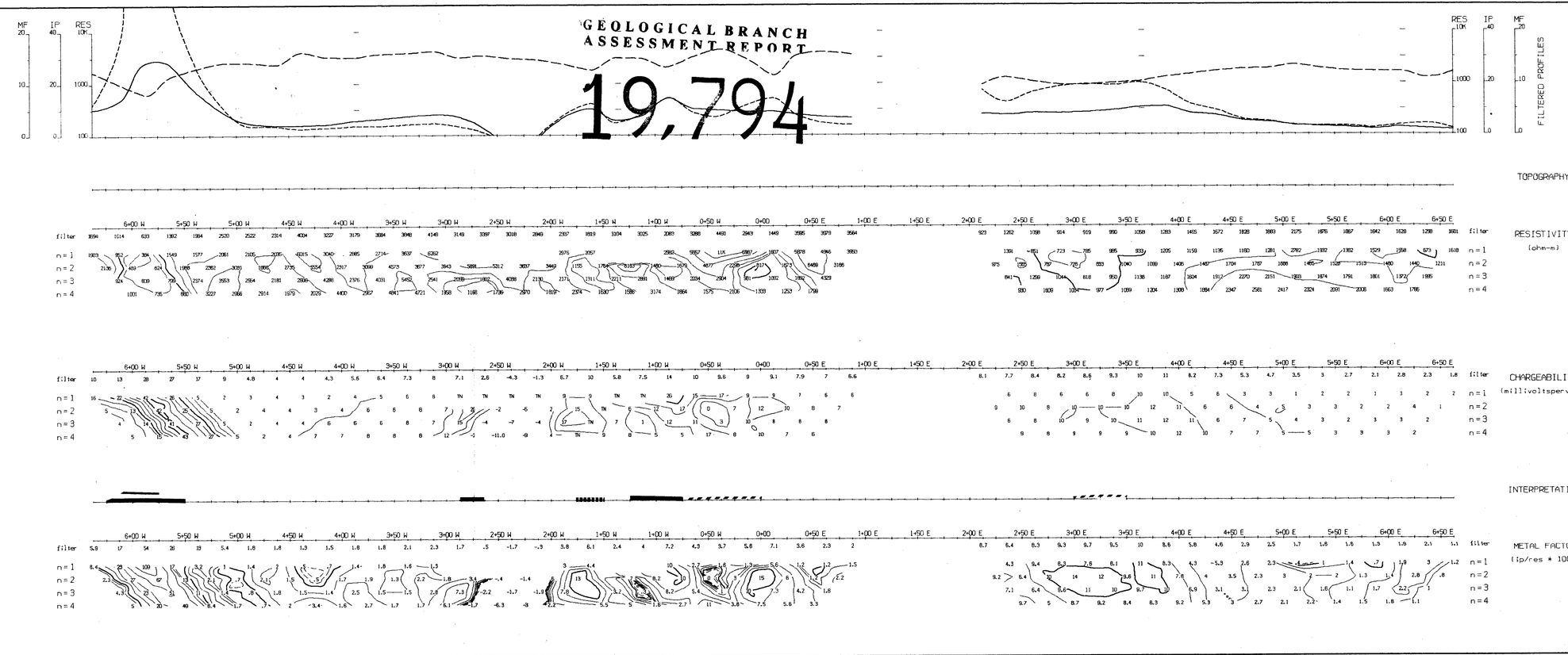
Resistivity feature.

FRAME MINING CORPORATION

INDUCED POLARIZATION SURVEY
CATFISH PROJECT
LIARD M.D., B.C.

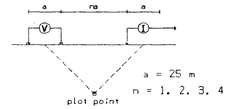
Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.



Line 1125 S

Dipole-Pole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M.,I.F.

INTERPRETATION

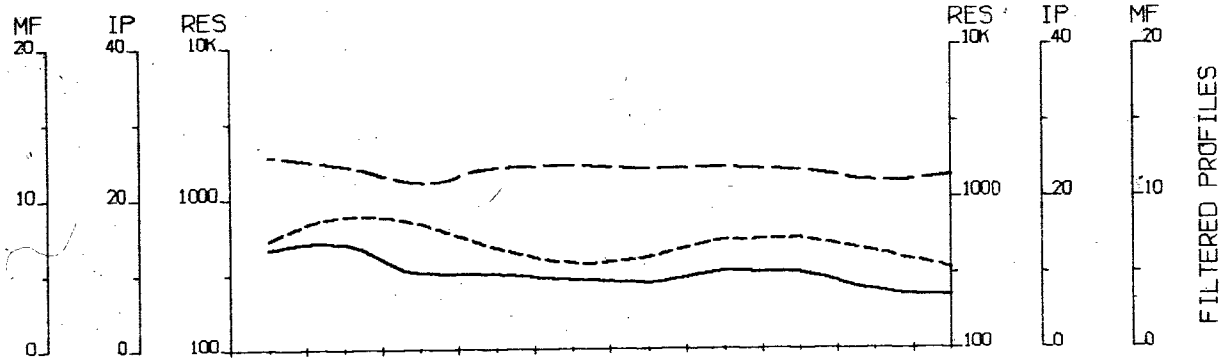
- Well defined, strong increase in polarization with or without marked decrease in resistivity.
- Fairly well defined moderate increase in polarization.
- Poorly defined polarization increase.
- Resistivity feature.

FRAME MINING CORPORATION

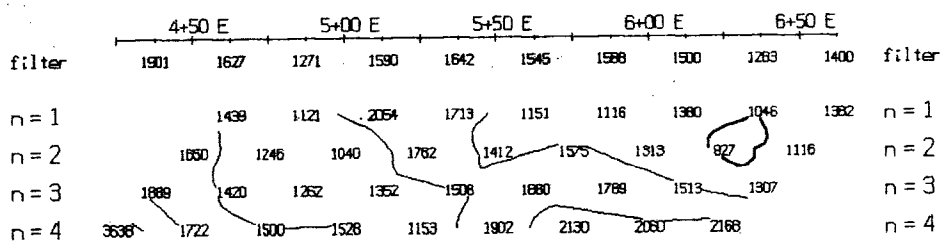
INDUCED POLARIZATION SURVEY
CATFISH PROJECT
LIARD M.D., B.C.

Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

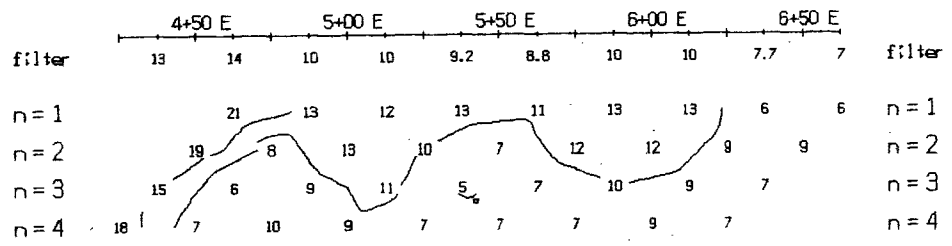
PETER E. WALCOTT & ASSOC. LTD.



TOPOGRAPHY

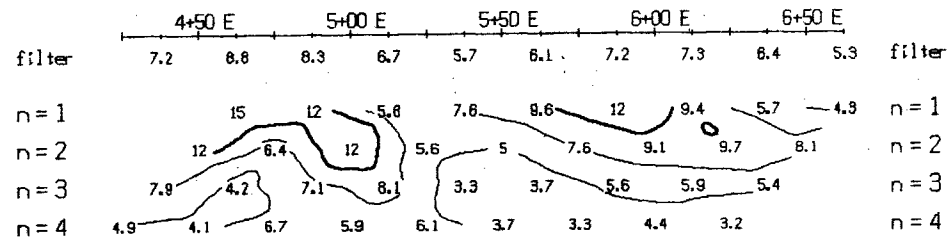


RESISTIVITY
(ohm-m)



CHARGEABILITY
(millivoltspervolt)

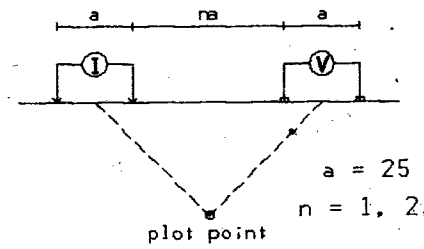
INTERPRETATION



METAL FACTOR
(ip/res * 1000)

Line 0

Dipole-Dipole Array



Filtered Profiles

		filter
Resistivity	— — —	*
Polarization	———	* *
Metal Factor	- - - - - -	* * *
		* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M., I.F.

INTERPRETATION

Well defined, strong increase in polarization with or without marked decrease in resistivity.

Fairly well defined moderate increase in polarization.

Poorly defined polarization increase.

Resistivity feature.

FRAME MINING CORPORATION

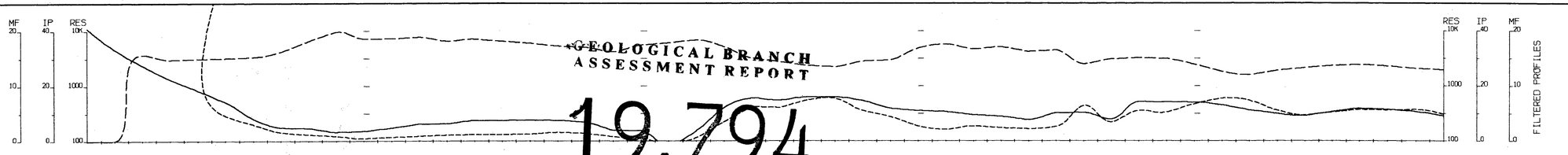
INDUCED POLARIZATION SURVEY

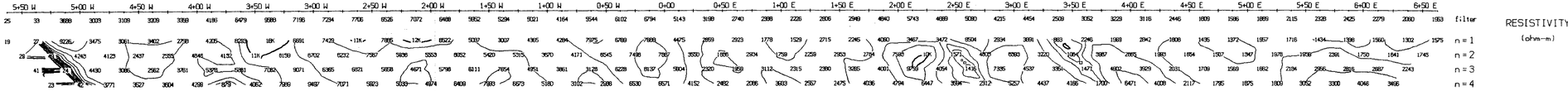
CATFISH PROJECT

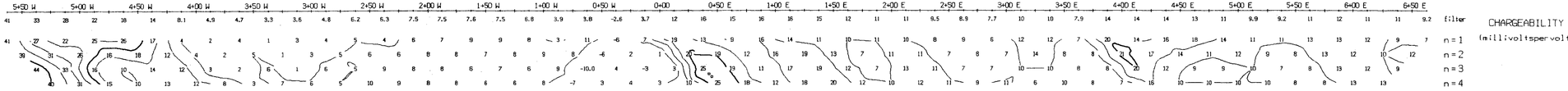
LIARD M.D., B.C.

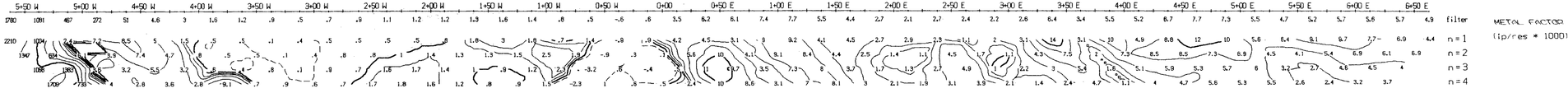
Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.





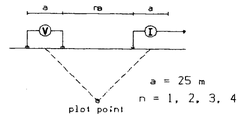




GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada

Line 0

Dipole-Pole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M.,I.F.

INTERPRETATION

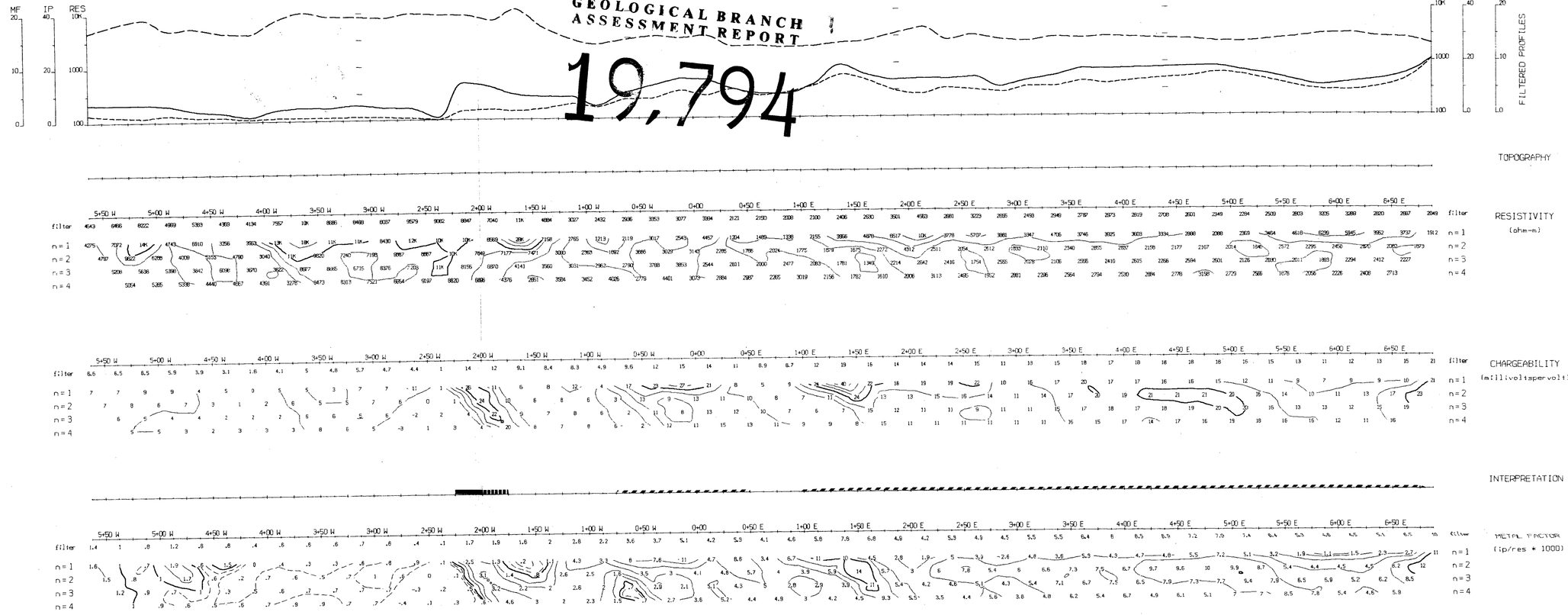
- Well defined, strong increase in polarization with or without marked decrease in resistivity.
- Fairly well defined moderate increase in polarization.
- Poorly defined polarization increase.
- Resistivity feature.

FRAME MINING CORPORATION

INDUCED POLARIZATION SURVEY
CATFISH PROJECT
LIARD M.D.,B.C.

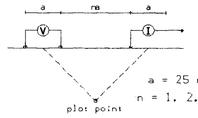
Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.



Line 400 N

Dipole-Pole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M..I.F.

INTERPRETATION

- Well defined, strong increase in polarization with or without marked decrease in resistivity.
- Fairly well defined moderate increase in polarization.
- Poorly defined polarization increase.

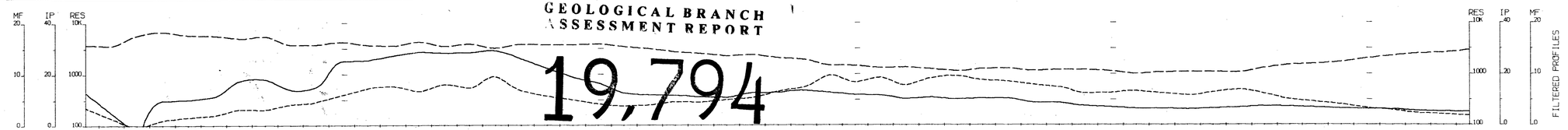
Resistivity feature.

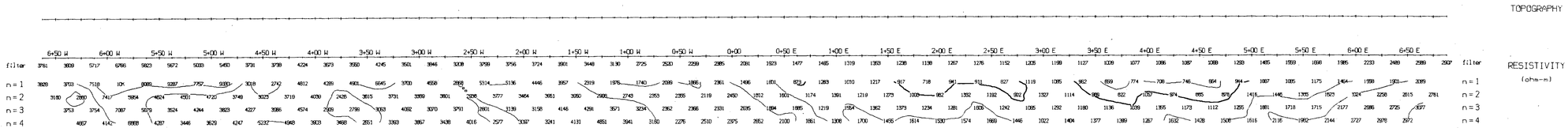
FRAME MINING CORPORATION

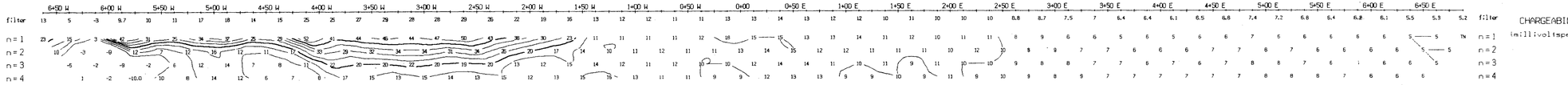
INDUCED POLARIZATION SURVEY
CATFISH PROJECT
LIARD M.D., B.C.

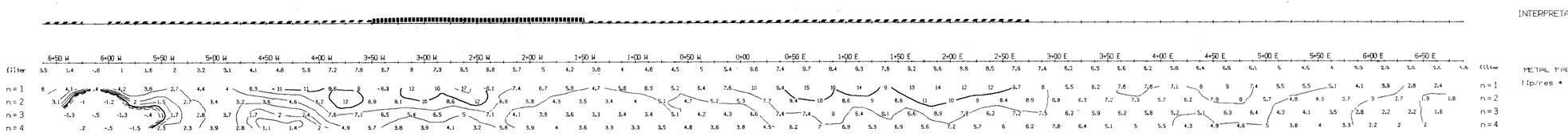
Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.



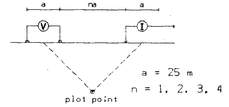






Line 800 N

Dipole-Pole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: EDA IP2 Rx, HUNTEC 2.5kw Tx
Frequency: .125 Hz
Operator: G.M..I.F.

INTERPRETATION

Well defined, strong increase in polarization with or without marked decrease in resistivity.

Fairly well defined moderate increase in polarization.

Poorly defined polarization increase.

Resistivity feature.

FRAME MINING CORPORATION

INDUCED POLARIZATION SURVEY
CATFISH PROJECT
LIARD M.D., B.C.

Date: 90/01/30 N.T.S.: 104M/15
Interpretation by: P.E.W.
Scale: 1 : 2500

PETER E. WALCOTT & ASSOC. LTD.