MERCURY EXPLORATIONS LIMITED (N.P.L.)
700 - 1281 West Georgia Street,
Vancouver 5, B.C.

2296

GEOPHYSICAL ASSESSMENT REPORT

FORT MINERAL CLAIMS

OMINECA MINING DIVISION

BRITISH COLUMBIA

N.T.S. 93-K-3 (East-Half)

Longitude 125° 02'W. Latitude 54° 02'N.

Dates of Work: Nov. 6th-23rd, 1968
May 10th-13th, 1969

by

ROBERT E. CHAPLIN, P.ENG.,
September 8th, 1969.

TABLE OF CONTENTS

ACCOMPANYING MAPS

(in pocket)

Map #1	Fort Mineral Claims, Location Map & I.P. Grid 1" = 2,640'
Map #2	Values Map - Fort Claims, Pole-dipole I.P. Apparent Resistivity in Ohm-Meters 1" = 500'
Map #3	Contour Map - Fort Claims, Pole-dipole I.P. Apparent Resistivity in Ohm-Meters 1" = 500'
Map #4	Values Map - Fort Claims, Pole-dipole I.P. Percent Frequency Effect 1" = 500'
Map #5	Contour Map - Fort Claims, Pole-dipole I.P. Percent Frequency Effect 1" = 500'
Map #6	Values Map - Fort Claims, Pole-dipole I.P. Metallic ConductionFactor 1" = 500'
Map #7	Contour Map - Fort Claims, Pole-dipole I.P. Metallic Conduction Factor 1" = 500'
Map #8	Values Map - Fort Claims, Pole-dipole I.P. E - W Central I.P. Profile of Pole-Dipole Zone 1" = 200'
Map #9	Contour Map - Fort Claims, Pole-dipole I.P. E - W Central I.P. Profile of Pole-Dipole Zone 1" = 200'
Map #10	Pole-Dipole I.P. Survey - Fort Claims Line U-8 1" = 1000'
Map #11	Pole-Dipole I.P. Survey - Fort Claims Line U-10 1" = 1000'
Map #12	Pole-Dipole I.P. Survey - Fort Claims Line U-11 1" = 1000'

GEOPHYSICAL ASSESSMENT REPORT

FORT MINERAL CLAIMS

OMINECA M.D., BRITISH COLUMBIA

SUMMARY

No mineral showings are located on the property and, with the exception of one creek canyon, no rock outcrop is known on the claims.

Pole-dipole induced polarization traverses, totalling nine line miles of data, outlined a threshold intensity, widespread anomaly in an area of gentle surface slopes which is underlain by an extensive and possibly deep cover of unconsolidated glacially derived materials. The 1.5 - 2.0 percent total sulphide content of the Endako Mine ore body, and its associated hydrothermally altered zone, makes its discovery at depth a geophysical possibility. Widespread, low intensity 'Endako-type' I.P. anomalies, located in favourable geologic settings, are the object of our search.

Molybdenum in soils near the I.P. anomaly, and northwest-trending dykes adjacent to the anomaly (on the east side), suggest a possible bedrock source of the obtained anomaly. A $41,500.00 program of drilling and more detailed I.P. follow-up is recommended.

LOCATION (N.T.S. 93-K-3 (East-Half), 125° 02'W; 54° 02'N.)

The Fort claims comprise a 32 full-sized and 6 fractional contiguous claim group, located four miles south of the village of Endako, 115 miles west of Prince George via Highway 16. The Fort claims are three miles east-southeast of the centre of Endako Mines open pit.

Fort Claims (continued)....

OWNERSHIP

Claim Name & No.	Record No.	Recording Date	Recorded Owner
Fort Fraction	64349	October 3, 1968	Mercury Explorations
Fort Fraction #1	64350	" " "	" "
Fort #1-2	64335-64336	" " "	" "
Fort Fraction #2	64351	" " "	" "
Fort Fraction #3	64352	" " "	" "
Fort #3-4	64337-64338	" " "	" "
Fort Fraction #4	64353	" " "	" "
Fort #5-6	64339-64340	" " "	" "
Fort Fraction #5	63632	" " "	" "
Fort #7-14 incl.	64341-64348	" " "	" "
Fort #15-24 incl.	63633-63642	" " "	" "
Fort #25-26	66571-72	FEB. 24. 1969	" "

ACCESS

Access to the property is by an excellent gravel road leading south from Highway 16 from Endako to the mine, and to Francois Lake's tourist resorts.

HISTORY

The Fort claims are essentially relocations of the eastern Bingo and Bongo claims. Previous work on the claims consisted of line cutting, geochemical surveys and some bulldozing for, mainly, assessment work purposes, as evidenced by the location of the bulldozed trenches. Previous work failed to locate any mineralization of economic worth.

The present work was done on the property between November 6th, 1968, and November 23rd, 1968, and May 10th-13th, 1969. The following personnel were present:

1968: A. Harman, L. Quettier, M. Allard, R. Brown, D.A. McDonald, P.Eng., R.E. Chaplin, P.Eng.

1969: L. Quettier, M. Berretta, R. Olson, D. Pulfer M. Alexander, R.E. Chaplin, P.Eng.

PROCEDURE FOR INDUCED POLARIZATION RECONNAISSANCE SURVEY

A Geoscience Inc., frequency-domain, Induced Polarization Unit performed 100 line miles of pole-dipole, 400 foot traverses at widely spaced reconnaissance intervals. Dipole-dipole surveys checked central portions of the pole-dipole features.

Stainless steel current electrodes were used and field voltages were measured through supersaturated copper sulphate solutions in porous pots. All self potentials were easily bucked. Applied currents commonly ranged between 0.2 and 0.75 amperes.

The percent frequency effect (P.F.E,) was calculated by subtracting both transmitter deviations and a daily receiver-transmitter calibration constant, from the obtained receiver deviation (PFE = Rx - Tx - Rcal). Transmitter deviations commonly ranged between 0.1 and 0.6 percent. Ground currents were adjusted to maintain transmitter deviations at one percent, or less.

Bedrock and overburden resistivities permitted the use of a 10.0 - 0.1 cycles per second frequency spread in a pole-dipole array, with no inductive coupling effects.

Apparent resistivities were calculated and plotted in ohm-meters,

i.e., $\rho = 2\pi (K) \frac{V}{I}$

Generally, Topley rock resistivities range upward from 400 ohm-meters. Overburden resistivities are variable, but mostly of 100 ohm-meters, or less, Dry gravel eskers, etc., have higher resistivities. Generally, expanding arrays indicate that apparent resistivities of 100, or less, are commonly due to overburden effects. The spread of the I.P. survey was varied to maintain resistivities above 100 ohm-meters. Similarly, resistivities higher than 300 - 400 were indicative of bedrock under a very thin overburden (from zero to 20 feet).

Procedure for Induced Polarization Reconnaissance Survey (continued)....

The survey was carried out maintaining an optimum spread to adequately explore for bedrock percent frequency effects (P.F.E.), using, where practical, a resistivity range between 100 and 300 ohm-meters. The pole-dipole array was commonly used with a 400-foot spread on a 10.0 - 0.1 cycles per second frequency range between 100 and 300 ohm-meters apparent resistivity range.

Studies were made to attempt a correlation between high bedrock percent frequency effects, caused by outcropping pyritic rocks and similar buried rocks. No exact relationship was determined, but the 'bedrock' P.F.E.'s commonly attenuate (where measured through non-conductive overburden) in proportion to the change in resistivity within the 200 to 100 ohm-meter range only !

The above resistivity range probably represents a critical overburden to bedrock proportion of volumes between 'typical' Topley intrusive rocks and 'typical non-conducting overburden. A metal conduction factor (M.C.F.) calculation may provide significant information for P.F.E. analysis in the critical resistivity range(?).

FORT MINERAL CLAIMS (125° 02'W; 54° 02'N.)

I.P. Survey Results

Survey results are plotted on four maps that accompany this report.

Percent frequency effect (P.F.E.) and apparent resistivity (ρ) backgrounds vary between 2.5 - 3.5 percent and 125 - 400 ohm-meters, respectively.

An I.P. anomaly was discovered trending in a northwesterly direction over a continuous length of 6,000 feet, and an average PFE of about 4.2 over the entire anomalous area, or about 1.4 times background.

An apparent resistivity low is semi-coincident with the P.F.E. threshold high and averages 1,000 feet width.

I.P. Survey Conclusions

The homogeneous continuous character of the apparent resistivity low indicates the presence of a very strong fracture zone, and/or buried bedrock valley.

The intensity and distribution of P.F.E. values indicate the presence of approximately one percent sulphides, or equivalent, present within and west of the resistivity zone.

Limited geologic data shows a concentration of quartz-latite porphyry dykes in Sweetnam Creek, near the southeast corner of the anomalous area. The dykes intrude fresh-appearing Endako quartz monzonitic rocks - the Endako Mines host rock. Light intensity gossans border the dyke contacts which trend in a northwesterly direction. No visible molybdenite was observed in these rocks, but a rockchip analysis of similar dyke rocks at the head of the Stellako River, half-mile easterly, showed a molybdenum content of 17 parts per million - which is 17 times background for the fresh Topley intrusive rocks of the area. The exposed Sweetnam Creek dykes did not have an anomalous I.P. response. Similar dykes near Stellako Lodge did have a slightly anomalous I.P. response.

Fort Claims - I.P. Survey Conclusions (continued)....

Total molybdenum in dry soils varying between 20 and 67 parts per million is present on line 8W. from 1,000 to 1,500 feet north of the base-line. (The geochemical background for Mo in soils in the area is zero.) The above values were detected from the company's 300-foot spaced reconnaissance soil sampling program at 1/2 mile intervals. No obvious geomorphic or geologic reason explains the presence of the localized high molybdenum in soils. A low topographic ridge separates the present drainage from the Endako Mines area toward Mercury's I.P. zone; however, the latter is 500 feet lower and 3 miles east-southeast of the old Stella prospect. It is possible that a now obscured, glacial melt-water feature deposited minor molybdenum-rich silts from a known sulphide source.

A localized minor resistivity high coincides with the anomalous soils area. Expanding array orientation surveys suggest that resistivity highs indicate a relative thinning of overburden, which, in this area, is estimated at commonly between 50 and 75 feet deep. The localized resistivity-geochemical feature may reflect the presence of molybdenum in soils that overlay a buried bedrock ridge.

In summary, the writer concludes that the I.P. anomaly located on the Fort mineral claims is possibly due to a bedrock structure containing a series of dykes of different ages within the Endako quartz monzonite, and that the dyke complex occupies a strong, continuous shear zone trending in a north-northwest direction which may have an associated bedrock relief; the zone is possibly weakly sulphide-bearing, especially toward the margins of the main resistivity low.

The I.P. technique should be considered as the best individual geophysical tool to locate buried Endako-type ore deposits.

Recommendations

The I.P. survey should be extended to explore the western portion of the Fort claims and to obtain more details on which to base further testing by drilling. Large diameter drilling with mud is recommended. All sludges should be sampled using setting tanks.

A program of no more than 1,500 feet of drilling is recommended.

Fort Claims (continued)....

Cost Estimate of Further Work

Induced Polarization	$5,000.00
Diamond Drilling	30,000.00
Supervision	1,500.00
Contingencies	5,000.00
Total	$41,500.00

SUMMARY OF I.P. SURVEY COSTS

November 6th - 23rd, 1968 and May 10th - 13th, 1969.

Payroll			
1968 - Allard, Quettier, Brown, Harman			$1,445.00
1969 - Quettier, Olson, Alexander, Pulfer & Berretta			600.00
Consulting			
D.A. McDonald & R.E. Chaplin P.Engs			1,890.00
Camp Support			1,215.00
Equipment Rental			880.00
Transportation			400.00
Field Supplies			
I.P. Wire	$626.00		
Radios	375.00		
Electronic Access.	450.00		1,451.00
		Sub-Total	$7,881.00
Expediting, Communications, Admin. @ 10%			788.00
		GRAND TOTAL	$8,669.00

Declared before me at the City of Vancouver, in the Province of British Columbia, this 12 day of September 1969, A.D.

Robert E. Chaplin

Robert E. Chaplin, P.Eng.,
September 8th, 1969.
Vancouver, B.C.

A Commissioner for taking Affidavits within British Columbia
A Notary Public in and for the Province of British Columbia

Sub-mining Recorder

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA ROBERT E. CHAPLIN

QUALIFICATIONS OF SUPERVISORY PERSONNEL

M.G. BERRETTA, M.Sc., for Ph.D.:

1965 - M.Sc., University of Windsor.

1967 - Ph.D. Candidate at University of British Columbia, Department of Geophysics.

1968 - 2 months with Seigel & Associates (I.P.)

1968-9 Taught Geophysics Exploration, Lab. U.B.C.,

1969 3 months of I.P. with Mercury Explorations in Endako Area.

1969-70 Lecturer in Elementary Exploration Geophysics at U.B.C.

ROBERT E. CHAPLIN, P.Eng.:

Registered Professional Engineer of the Province of British Columbia.

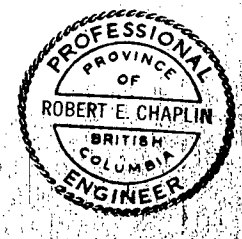
Graduate in Geological Engineering from the University of British Columbia, 1959.

Seventeen years' experience in mineral exploration.

Five years' experience owning and operating I.P. Unit, (used in Survey).

Robert E. Chaplin

Robert E. Chaplin, P.Eng.,
September 8th, 1969,
Vancouver, B.C.



REFERENCES

Lode Metals in British Columbia, 1965, p. 114, Dr. J.M. Carr,

Lode Metals in British Columbia, 1967, p. 114, Dr. J.M. Carr,

Minister of Mines & Petroleum Resources, 1966, p. 117.

Minister of Mines & Petroleum Resources, 1964, p. 58.

Bache & Co. - Placer Development Ltd, January, 1969, pp. 7-14, (an Institutional Report).

Dept. of Energy, Mines & Resources, Geophysical Airborne Magnetic Series, Sheet 93-F & 93-K.

Geology of the Endako Molybdenum Deposit, by E. Kimura & A.D. Drummond, 72nd Annual Northwest Mining Association, Spokane, Washington, 1966.

[redacted]

Fort Mineral Claims, Location Map & I.P. Grid — 1" = 2,640'

Fort Claims: Pole-dipole I.P., L = 400', 10.0 - 0.1 cps, Apparent Resistivity in Ohm-Meters, $\rho = \frac{V}{I}[2\pi n(n+1)]10^{-3}L$ — 1" = 500'

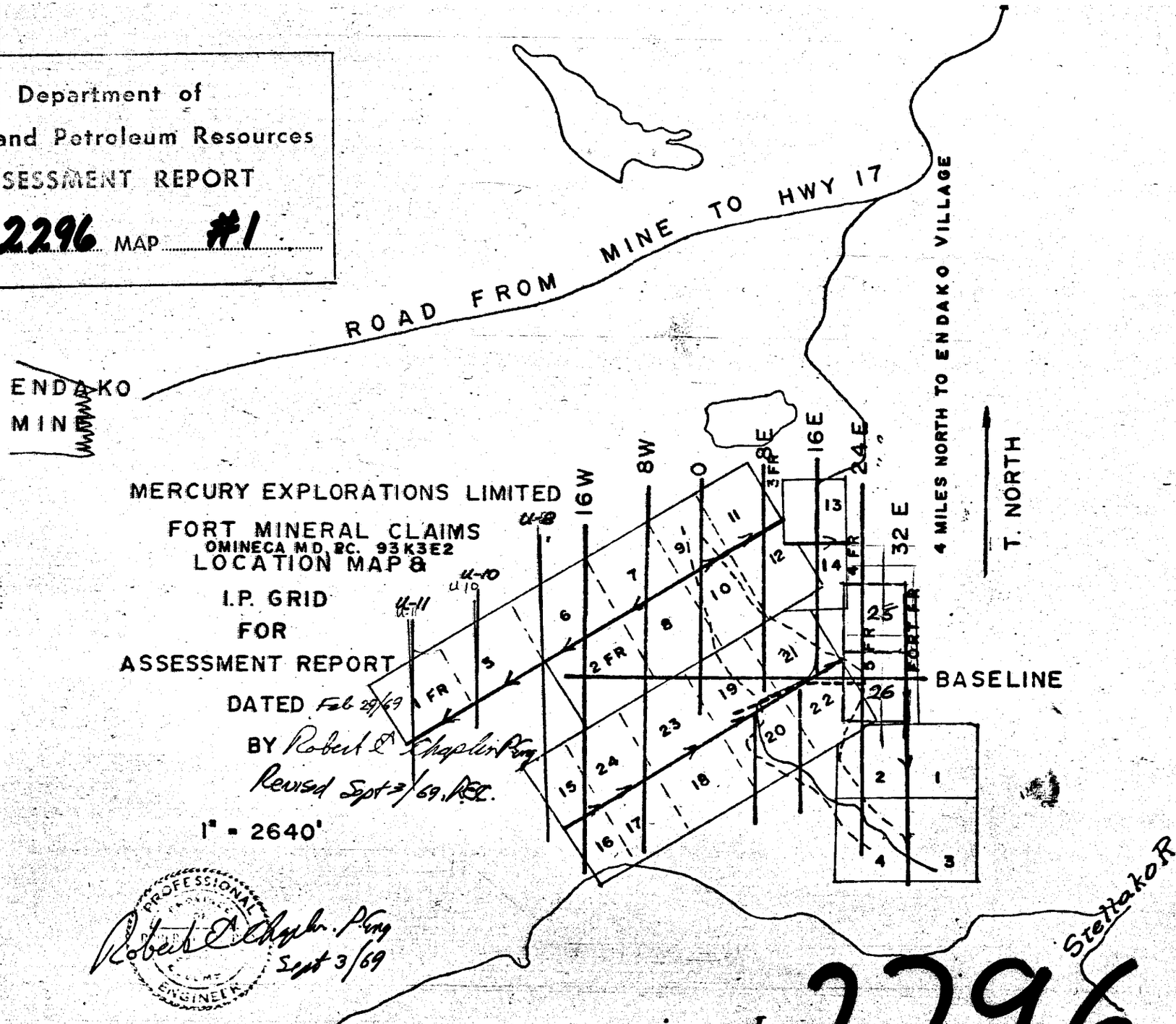
Fort Claims: Pole-Dipole I.P., L = 400', 10.0-0.1 cps, Percent Frequency Effect, PFE=Rx-Tx-Rcal — 1" = 500'

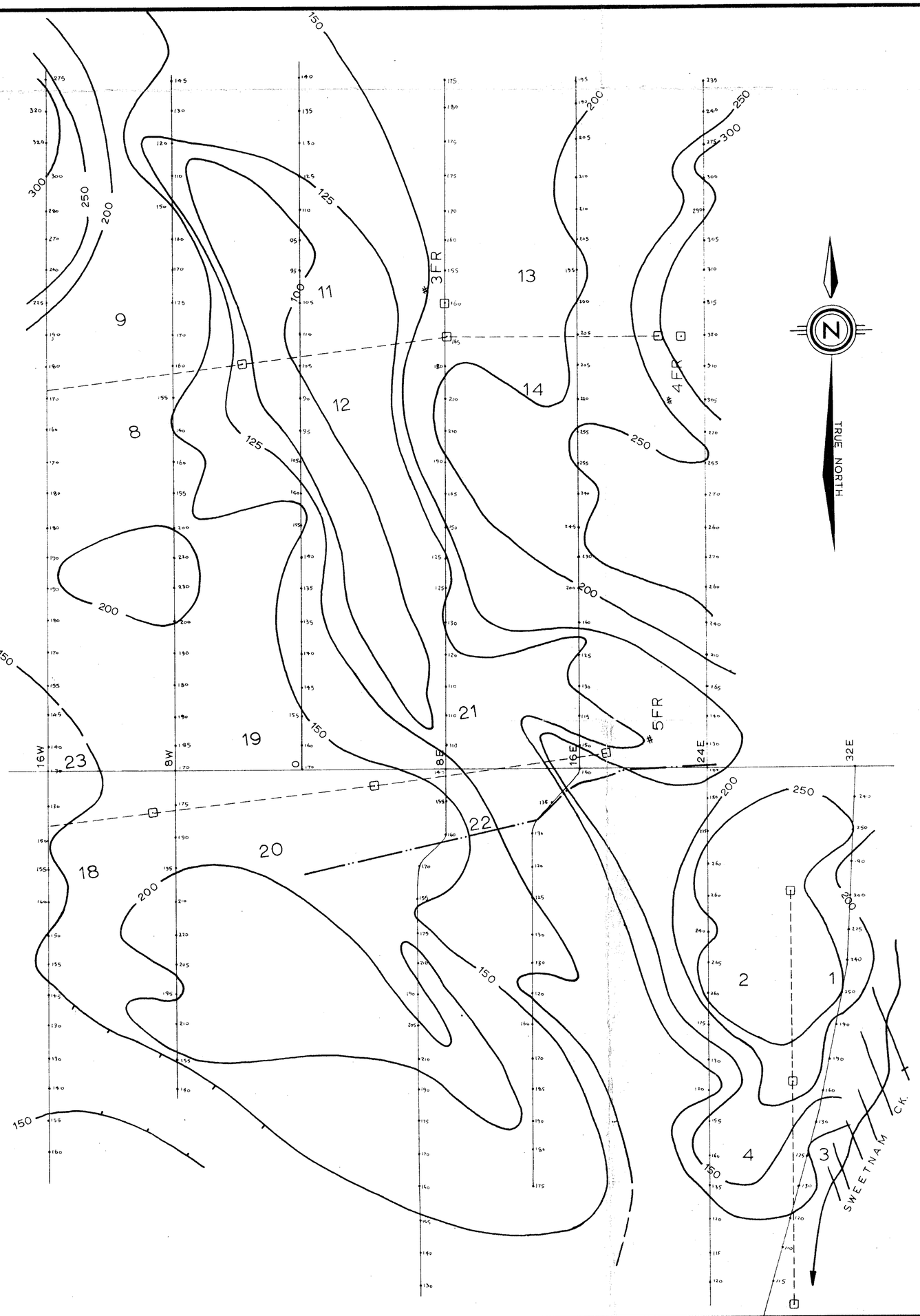
Fort Claims: Pole-Dipole I.P., L = 400', 10.0-0.1 cps, Metallic Conduction Factor, MCF = $\frac{PFE}{\rho} \times 1000$ — 1" = 500'

Fort Claims: Dipole-Dipole I.P., E-W Central I.P. Profile of Pole-Dipole Zone — 1" = 200'

Fort Claims: PFE and ρ Profiles Pole-Dipole, Lines U-8, U-10, U-11. — 1" = 1,000'

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #1





Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #2

2296

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

Robert E. Chaplin

11
12
FORT CLAIM POSTS AND LOCATION LINE

DIPOLE DIPOLE TRAVERSE

MERCURY EXPLORATIONS LIMITED

POLE-DIPOLE I.P.
L=400', 10·0-0·1c.p.s.

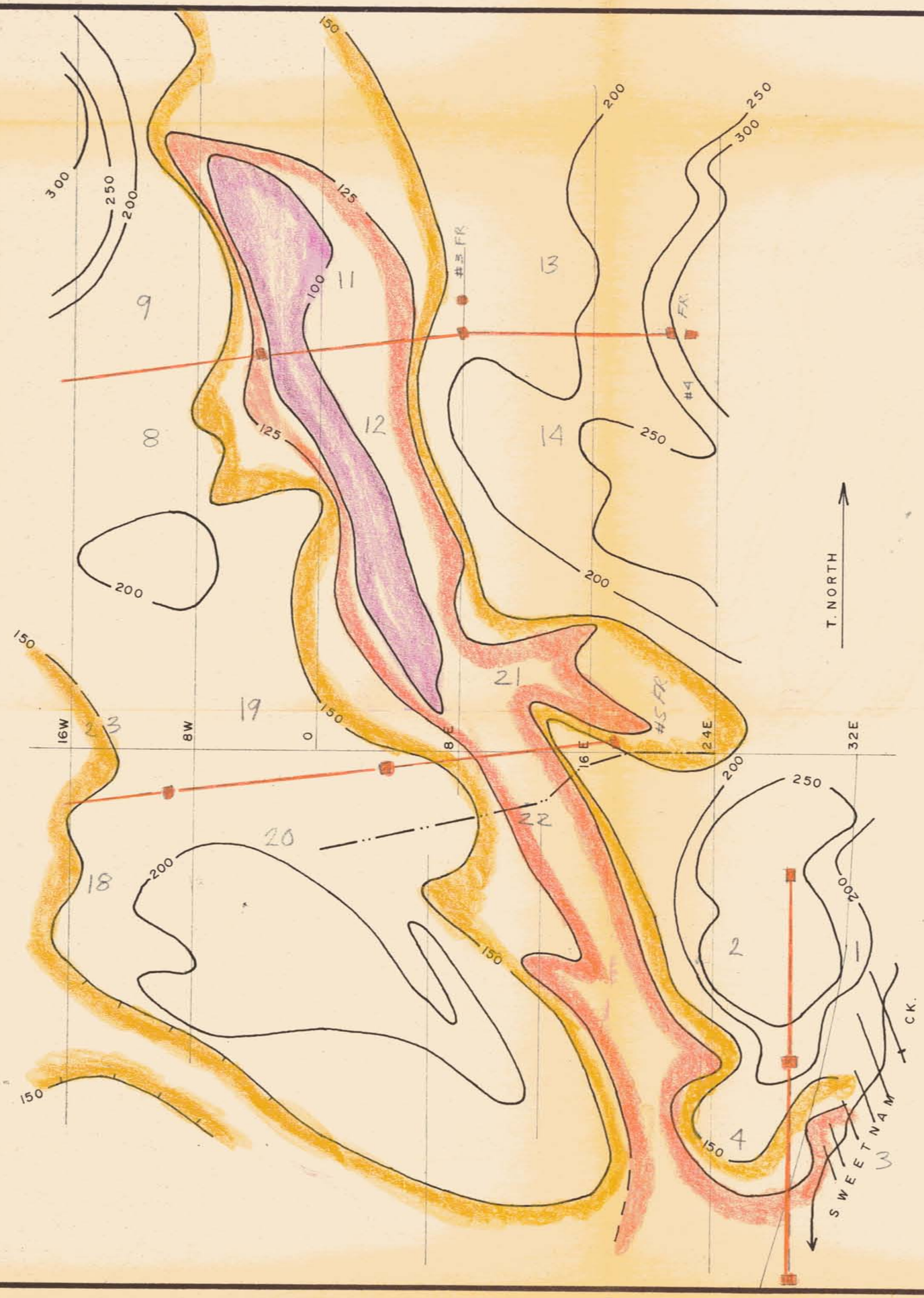
APPARENT RESISTIVITY
in OHM-METERS

$$P = \frac{V}{I}\left[2\pi n(n+1)\right]10^{-3}L$$

ACCOMPANIES: FORT CLAIMS ASSESSMENT REPORT – 1

SIGNED:

M.D. OMINECA, B.C. | N.T.S. 93K3E2 | SCALE 1"= 500' | DRAWN R.E.C. 20-2-69



11

12

FORT CLAIM POSTS + LOCATION LINE

DIPOLE-DIPOLE TRAVERSE

MERCURY EXPLORATIONS LIMITED

POLE-DIPOLE I.P.
L = 400', 100-0.1 C.P.S.

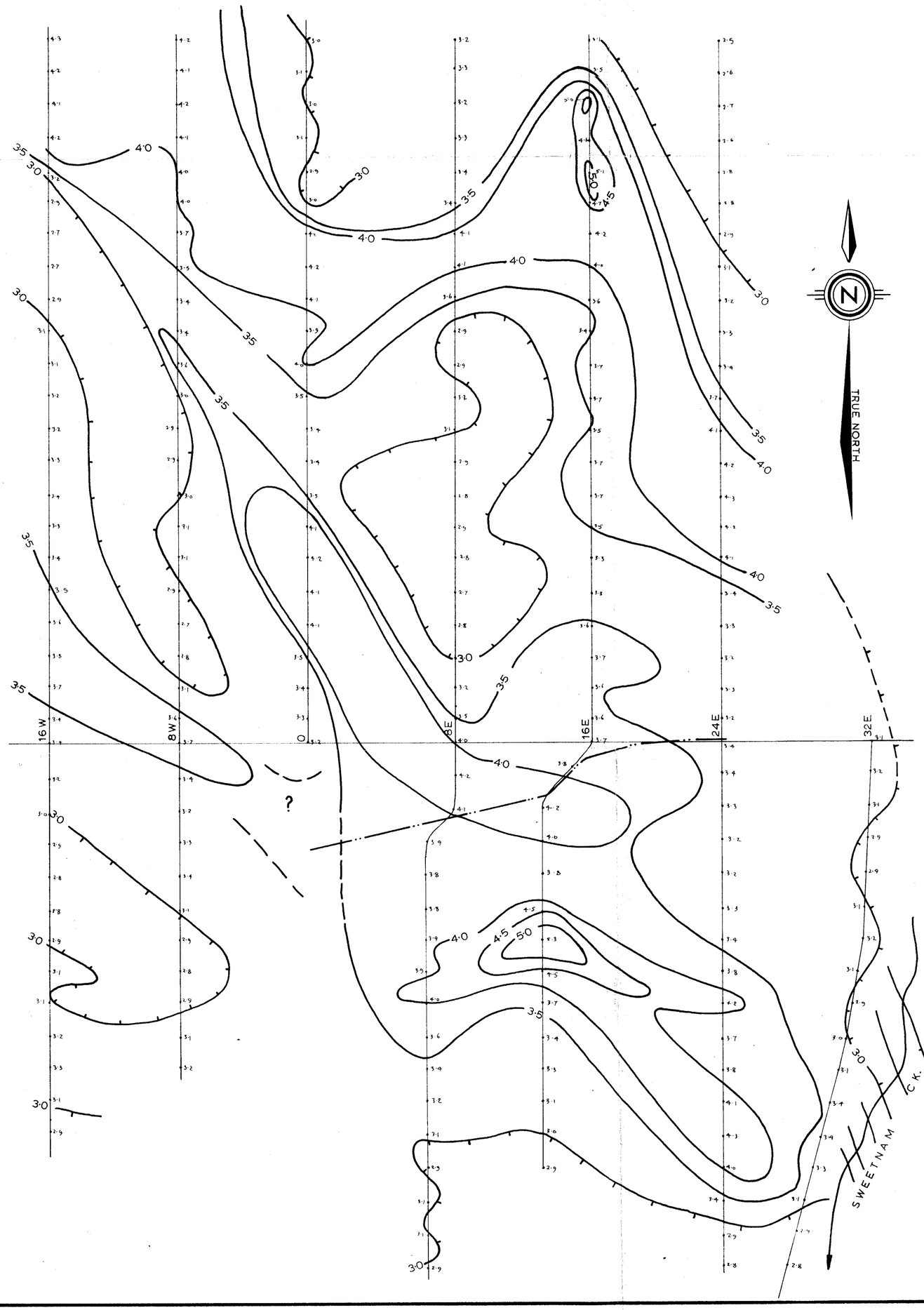
ACCOMPANIES: FORT CLAIMS
ASSESSMENT REPORT-1

SIGNED: Robert E. Chaplin Feb 28/69

APPARENT RESISTIVITY
in OHM-METERS

$$\rho = \frac{V}{I}\left[2\pi n(n+1)\right] 10^{-3} L$$

M.D. OMINECA	N.T.S. 93K3E2	SCALE 1"=500'	DRAWN REC



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #4

2296

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

Robert E. Chaplin

——··——··—— DIPOLE DIPOLE TRAVERSE

MERCURY EXPLORATIONS LIMITED

POLE - DIPOLE I.P.
L=400', 10·0 - 0·1 c.p.s.

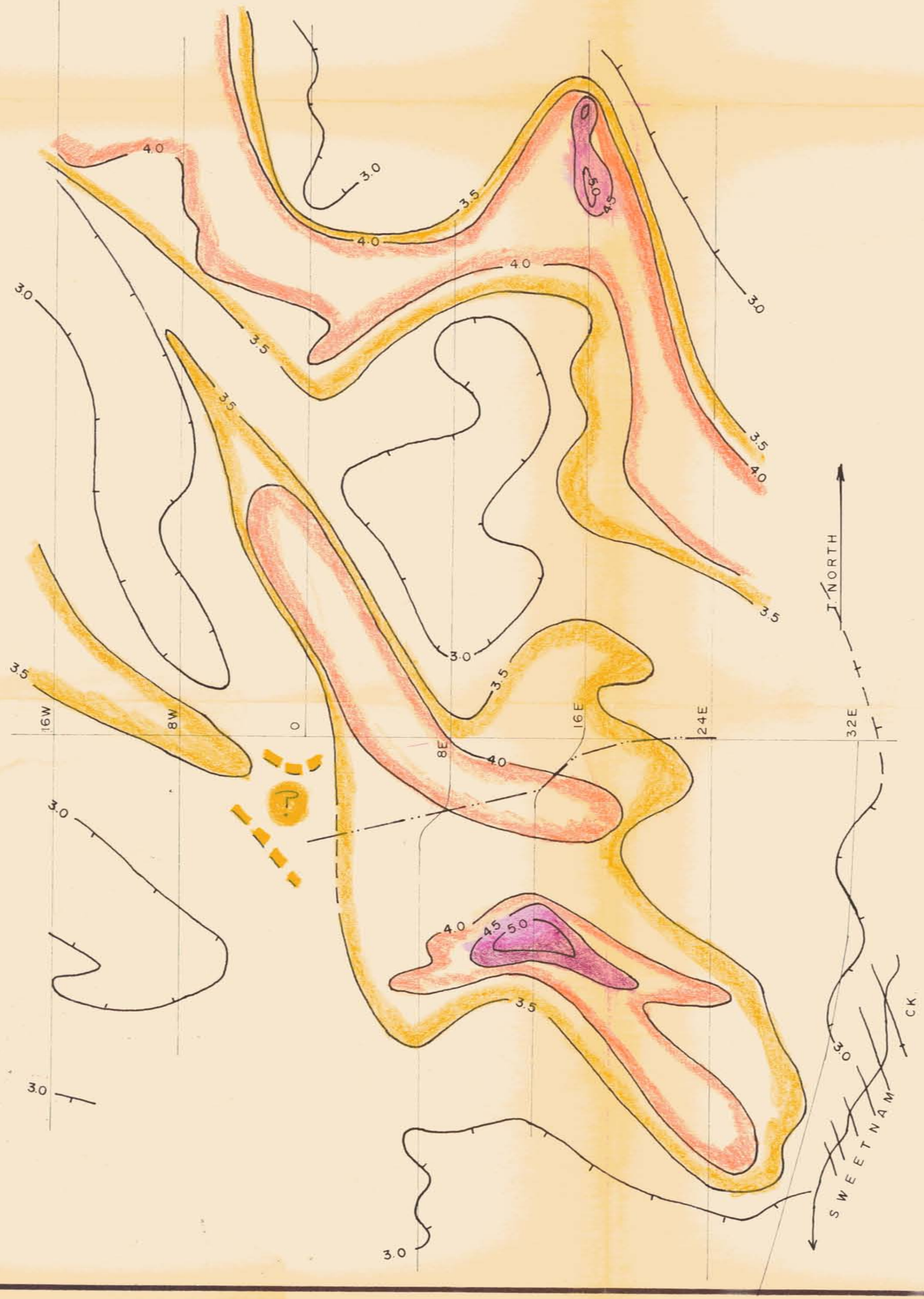
PERCENT FREQUENCY EFFECT

ACCOMPANIES: FORT CLAIMS
ASSESSMENT REPORT - 1

P.F.E. = Rx - Tx - Rcal.

SIGNED:

M.D. OMINECA, B.C. | N.T.S. 93K3E2 | SCALE 1"= 500' | DRAWN R.E.C. 20-2-69

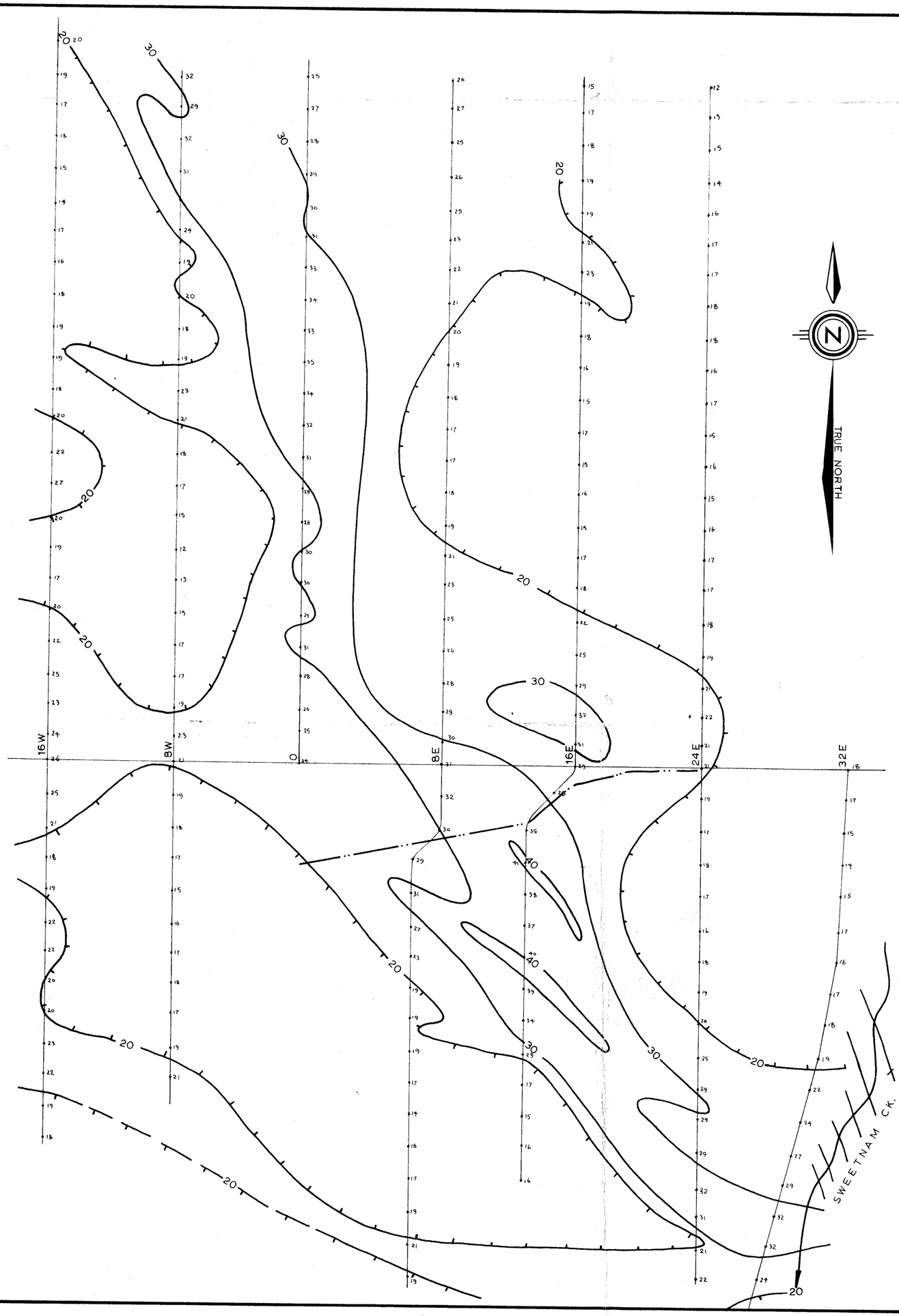


2296

MERCURY EXPLORATIONS LIMITED

POLE-DIPOLE I.P. L=400', 10.0-0.1 C.P.S.	PERCENT FREQUENCY EFFECT. P.F.E. = R_x - T_x - Rcal.
ACCOMPANIES: FORT CLAIMS ASSESSMENT REPORT-I	
SIGNED: Robert E. Chaplin Feb 20/69	

MD OMINECA, BC	NTS 93K3E2	SCALE 1" = 500'	DRAWN R.E.C.



2296

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #6

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

Robert E. Chaplin

—··—··—·· DIPOLE DIPOLE TRAVERSE

MERCURY EXPLORATIONS LIMITED

POLE - DIPOLE I.P
L = 400', 10·0-0·1c.p.s.

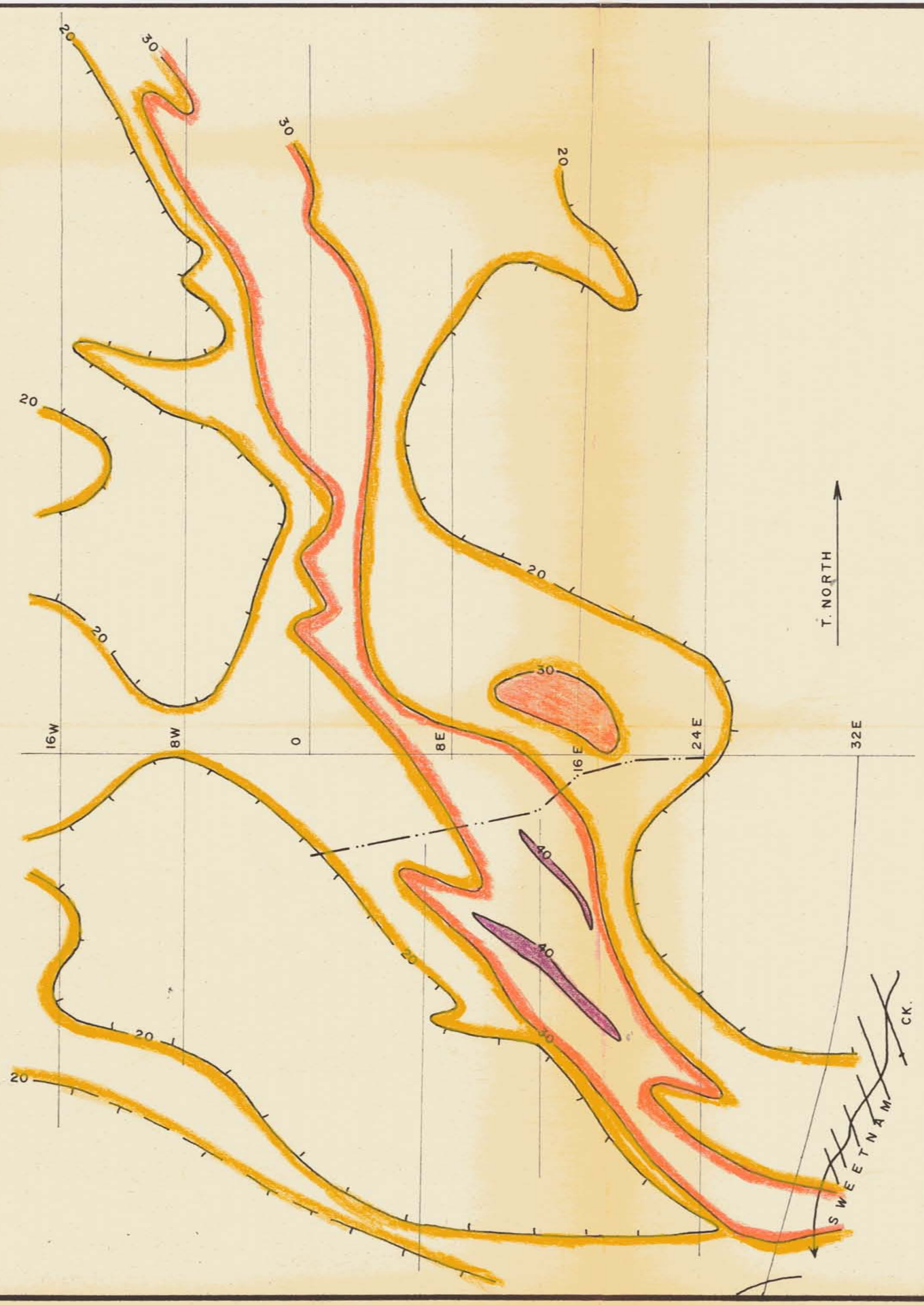
METALLIC CONDUCTION FACTOR

$$M.C.F. = \frac{P.F.E.}{P} \times 1000$$

ACCOMPANIES: FORT CLAIMS
ASSESSMENT REPORT – 1

SIGNED:

M.D. OMINECA, B.C.	N.T.S. 93K3E2	SCALE 1"=500'	DRAWN R.E.C. 20-2-69



2296

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

—·· —·· — DIPOLE-DIPOLE TRAV.

MERCURY EXPLORATIONS LIMITED

POLE-DIPOLE I.P.
L = 400', 10.0-0.1 C.P.S

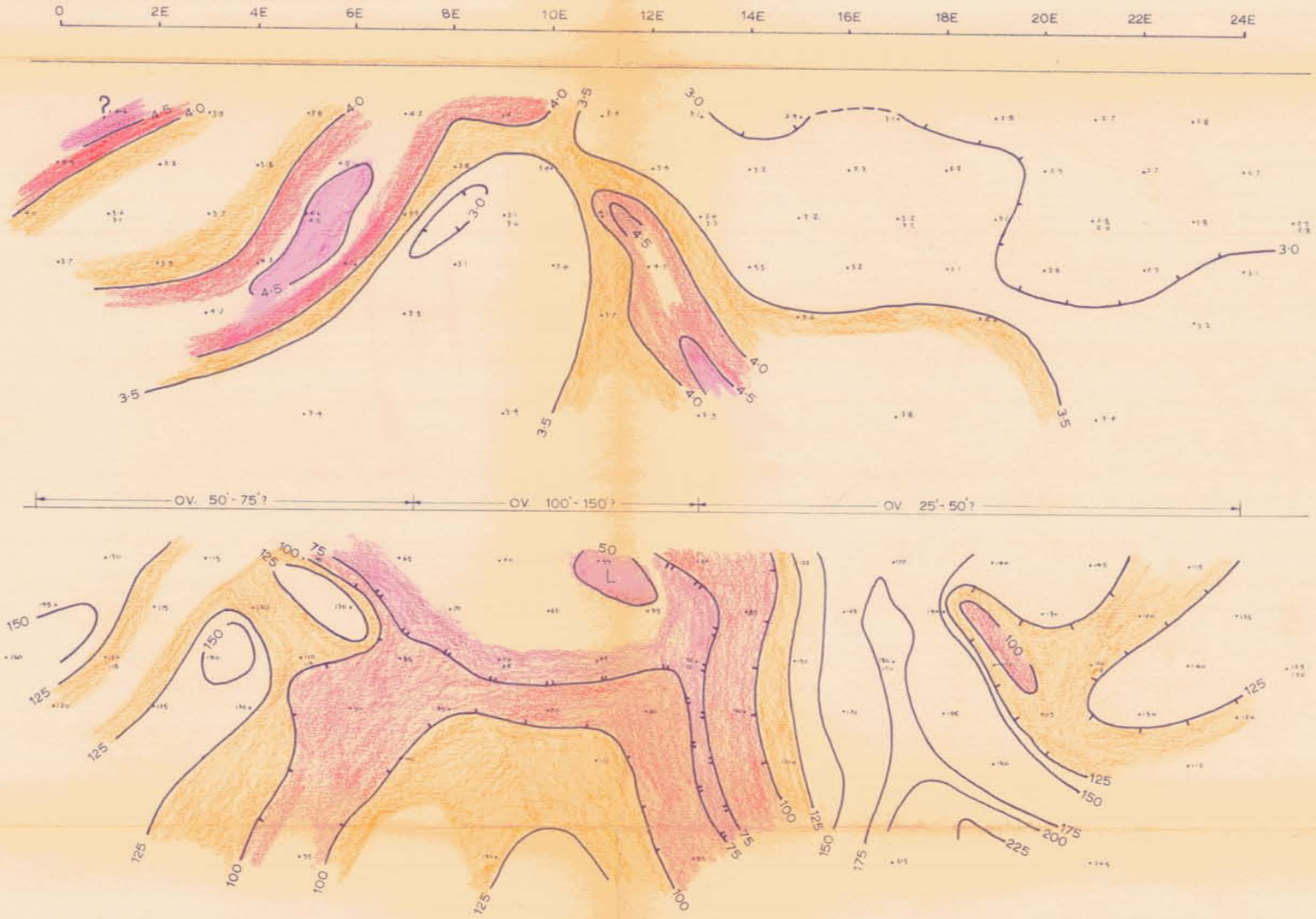
METALLIC CONDUCTION FACTOR

$$M.C.F. = \frac{P.F.E.}{\rho} \times 1000.$$

ACCOMPANIES: FORT CLAIMS ASSESSMENT REPORT-I

SIGNED: Robert E. Chaplin Feb 28/69

M.D. OMINECA, BC | N.T.S. 93K3E2 | SCALE 1"=500' | DRAWN. REC



P. F. E. = RX - TX - Rx cal.
10.0 - 0.1 c.p.s.

A = 163'
N = 1
N = 2
N = 3
N = 4

A = 326'
N = 1
N = 2
N = 3

$P = 2\pi N(N+1)(N+2)\frac{AV}{2I}$

OHM - METERS

A = 163'
N = 1
N = 2
N = 3
N = 4

A = 326'
N = 1
N = 2
N = 3

$M.C.F. = \frac{P.F.E. \times 1000}{P}$

A = 163'
N = 1
N = 2
N = 3
N = 4

A = 326'
N = 1
N = 2

2296

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #8

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

Robert E. Chaplin

MERCURY EXPLORATIONS LIMITED

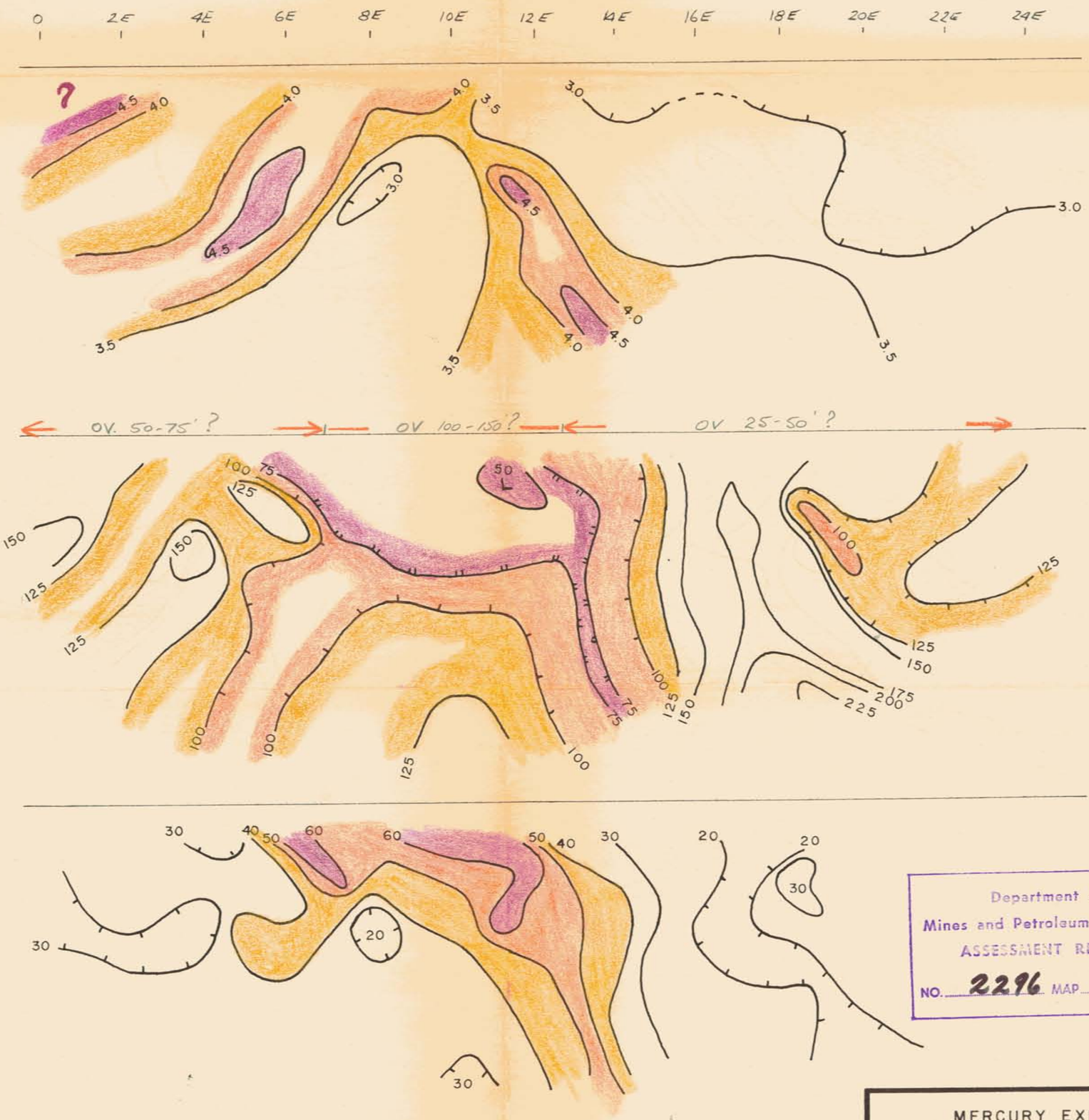
DIPOLE - DIPOLE I.P.

E - W CENTRAL I.P. PROFILE OF FORT CLAIMS POLE-DIPOLE ZONE

ACCOMPANIES FORT CLAIMS ASSESSMENT REPORT - 1

SIGNED:

M.D. OMINECA, B.C. | N.T.S. 93K3E2 | SCALE 1" = 200' | DRAWN. R.E.C. 20-2-69



$$P.F.E = \frac{RX - TX - Rx\,cal.}{10.0 - 0.1\,c.p.s.}$$

$$P = 2\pi N(N+1)(N+2)\frac{A}{2}\frac{V}{I}$$

OHM-METERS

$$M.C.F = \frac{P.F.E. \times 1000}{P}$$

2296

MERCURY EXPLORATIONS LIMITED

DIPOLE-DIPOLE I.P.

E-W CENTRAL I.P. PROFILE OF FORT CLAIMS POLE-DIPOLE ZONE

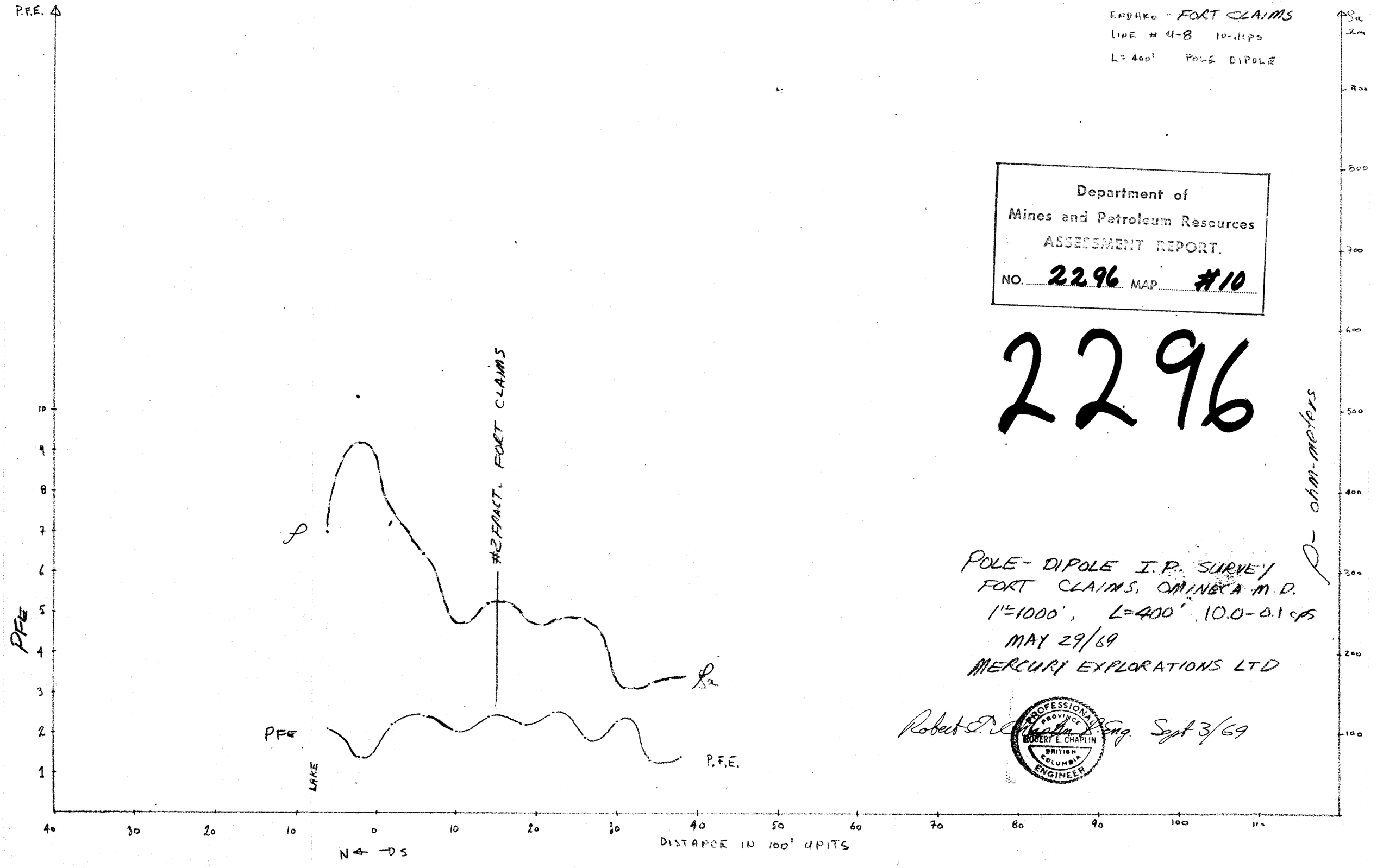
ACCOMPANIES: FORT CLAIMS ASSESSMENT REPORT-I

SIGNED: Robert E. Chaplin, P.Eng.

M.D. OMINECA, B.C. | N.T.S. 93K3E2 | SCALE 1" = 200' | DRAWN R.E.C. 20/2/69

ENDAKO - FORT CLAIMS
LINE # 4-8 10-steps
L= 400' POLE DIPOLE

2296



POLE-DIPOLE I.P. SURVEY
FORT CLAIMS, OMINECA M.D.
1"=1000', L=400', 10.0-0.1 cps
MAY 29/69
MERCURY EXPLORATIONS LTD

Robert E. Chaplin Eng. Sept 3/69

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

EPDAICO - FORT CLAIMS
LINE # 11-10 10-.1 cps
L = 400' POLE DIPOLE

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #11

2296

POLE-DIPOLE I.P. SURVEY
FORT CLAIMS, OMINECA M.D.
1"=1000', L=400'; 10.0-0.1 cps
MAY 30/69
MERCURY EXPLORATIONS LTD.
Robert E. Chaplin P.Eng
Sept 3/69

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

F.P. FORT 6, CLAIM

200' WEST OF LP. FORT 15+16

PFE

DISTANCE IN 100' UNITS

N ← → S

ENDAKO – FORT CLAIMS
LINE # 11-11 10-1cps
L=400' POLE DIPOLE

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2296 MAP #12

2296

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ROBERT E. CHAPLIN

POLE DIPOLE I.P. SURVEY
FORT CLAIMS
OMINECA M.D. BC
1"=1000'
LINE RUNS N-S.
L=400' ∓ 10.0-0.1 cps
MAY 28/69.
MERCURY EXPLORATIONS LTD.

Robert E. Chaplin, P.Eng.
Sept 3rd/69