'79-#302-#7397

REPORT ON THE
INDUCED POLARIZATION
AND RESISTIVITY SURVEY
WHITEMAN CREEK AREA
VERNON MINING DIVISION, B.C.
FOR
J.R. WOODCOCK CONSULTANTS LTD.

PHOENIX

Report on the
Induced Polarization
& Resistivity survey
Whiteman Creek Area
Vernon Mining Division, B.C.
For
J.R. Woodcock Consultants Ltd.

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NOTES ON THE THEORY, METHOD OF FIELD OPERATION, AND PRESENTATION OF DATA FOR THE INDUCED POLARIZATION METHOD

Induced Polarization as a geophysical measurement refers to the blocking action or polarization of metallic or electronic conductors in a medium of ionic solution conduction.

This electro-chemical phenomenon occurs wherever electrical current is passed through an area which contains metallic minerals such as base metal sulphides. Normally, when current is passed through the ground, as in resistivity measurements, all of the conduction takes place through ions present in the water content of the rock, or soil, i.e. by ionic conduction. This is because almost all minerals have a much higher specific resistivity than ground water, The group of minerals commonly described as "metallic", however, have specific resistivities much lower than ground waters. The induced polarization effect takes place at those interfaces where the mode of conduction changes from ionic in the solutions filling the interstices of the rock to electronic in the metallic minerals present in the rock.

The blocking action or induced polarization mentioned above, which depends upon the chemical energies necessary to allow the ions to give up or receive electrons from the metallic surface, increases with the time that a d.c. current is allowed to flow through the rock; i.e. as ions pile up against the metallic interface the resistance to current flow increases. Eventually, there is enough polarization in the form of excess ions at the interfaces, to appreciably reduce the amount of current flow through the metallic particle. This polarization takes place at each of the infinite number of solution-metal interfaces in a mineralized rock.

When the d.c. voltage used to create this d.c. current flow is cut off, the Coulomb forces between the charged ions forming the polarization cause them to return to their normal position. This movement of charge creates a small current flow which can be measured on the surface of the ground as a decaying potential difference.

From an alternate viewpoint it can be seen that if the direction of the current through the system is reversed repeatedly before the polarization occurs, the effective resistivity of the system as a whole will change as the frequency of the switching is changed. This is a consequence of the fact that the amount of current flowing through each metallic interface depends upon the length of time that current has been passing through it in one direction.

The values of the per cent frequency effect or F.E. are a measurement of the polarization in the rock mass. However, since the measurement of the degree of polarization is related to the apparent resistivity of the rock mass it is found that the metal factor values or M.F. are the most useful values in determining the amount of polarization present in the rock mass. The MF values are obtained by normalizing the F.E. values for varying resistivities.

The induced polarization measurement is perhaps the most powerful geophysical method for the direct detection of metallic sulphide mineralization, even when this mineralization is of very low concentration. The lower limit of volume per cent sulphide necessary to produce a recognizable IP anomaly will vary with the geometry and geologic environment of the source, and the method of executing the survey. However, sulphide mineralization of less than one per cent by volume has been detected by the IP method under proper geological conditions.

The greatest application of the IP method has been in the search for disseminated metallic sulphides of less than 20% by volume. However, it has also been used successfully in the search for massive sulphides in situations where, due to source geometry, depth of source, or low resistivity of surface layer, the EM method cannot be successfully applied. The ability to differentiate ionic conductors, such as water filled shear zones, makes the IP method a useful tool in checking EM anomalies which are suspected of being due to these causes.

In normal field applications the IP method does not differentiate between the economically important metallic minerals such as chalcopyrite, chalcocite, molybdenite, galena, etc., and the other metallic minerals such as pyrite. The induced polarization effect is due to the total of all electronic conducting minerals in the rock mass. Other electronic conducting materials which can produce an IP response are magnetite, pyrolusite, graphite, and some forms of hematite.

In the field procedure, measurements on the surface are made in a way that allows the effects of lateral changes in the properties of the ground to be separated from the effects of vertical changes in the properties. Current is applied to the ground at two points in distance (X) apart. The potentials are measured at two points (X) feet apart, in line with the current electrodes is an integer number (n) times the basic distance (X).

The measurements are made along a surveyed line, with a constant distance (nX) betwen the nearest current and potential electrodes. In most surveys, several traverses are made with various values of (n); i.e. (n) = 1,2,3,4, etc. The kind of survey required (detailed or reconnaissance) decides the number of values of (n) used.

In plotting the results, the values of apparent resistivity, apparent per cent frequency effect, and the apparent metal factor measured for each set of electrode positions are plotted at the intersection of grid lines, one from the center point of the current electrodes and the other from the center point of the potential electrodes. (See Figure A.) The resistivity values are plotted at the top of the data profile, above the metal factor values. On a third line, below the metal factor values, are plotted the values of the percent frequency effect. The lateral displacement of a given value is determined by the location along the survey line of the center point between the current and potential electrodes. The distance of the value from the line is determined by the distance (nX) between the current and potential electrodes when the measurement was made.

The separation between sender and receiver electrodes is only one factor which determines the depth to which the ground is being sampled in any particular measurement. The plots then, when contoured, are not section maps of the electrical properties of the ground under the survey line. The interpretation of the results from any given survey must be carried out using the combined experience gained from field results, model study results and the theoretical investigations. The position of the electrodes when anomalous values are measured is important in the interpretation.

In the field procedure, the interval over which the potential differences are measured is the same as the interval over which the electrodes are moved after a series of potential readings has been made.

One of the advantages of the induced polarization method is that the same equipment can be used for both detailed and reconnaissance surveys merely by changing the distance (X) over which the electrodes are moved each time. In the past, intervals have been used ranging from 25 feet to 2000 feet for (X). In each case, the decision as to the distance (X) and the values of (n) to be used is largely determined by the expected size of the mineral deposit being sought, the size of the expected anomaly and the speed with which it is desired to progress.

The diagram in Figure A demonstrates the method used in plotting the results. Each value of the apparent resistivity, apparent metal factor, and apparent per cent frequency effect is plotted and identified by the position of the four electrodes when the measurement was made. It can be seen that the values measured for the larger values of (n) are plotted farther from the line indicating that the thickness of the layer of the earth that is being tested is greater than for the smaller values of (n); i.e. the depth of the measurement is increased.

The IP measurement is basically obtained by measuring the difference in potential or voltage (ΔV)obtained at two operating frequencies. The voltage is the product of the current through the ground and the apparent resistivity of the ground. Therefore in field situations where the current is very low due to poor electrode contact, or the apparent resistivity is very low, or a combination of the two effects; the value of (ΔV) the change in potential will be too small to be measurable. The symbol "TL" on the data plots indicates this situation.

In some situations spurious noise, either man made or natural, will render it impossible to obtain a reading. The symbol "N" on the data plots indicates a station at which it is too noisy to record a reading. If a reading can be obtained, but for reasons of noise there is some doubt as to its accuracy, the reading is bracketed in the data plot ( ).

In certain situations negative values of Apparent Frequency Effect are recorded. This may be due to the geologic environment or spurious electrical effects. The actual negative frequency effect value recorded is indicated on the data plot, however, the symbol "NEG" is indicated for the corresponding value of Apparent Metal Factor. In contouring negative values the contour lines are indicated to the nearest positive value in the immediate vicinity of the negative value.

The symbol "NR" indicates that for some reason the operator did not attempt to record a reading although normal survey procedures would suggest that one was required. This may be due to inaccessible topography or other similar reasons. Any symbol other than those discussed above is unique to a particular situation and is described within the body of the report.

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METHOD USED IN PLOTTING DIPOLE-DIPOLE INDUCED POLARIZATION AND RESISTIVITY RESULTS

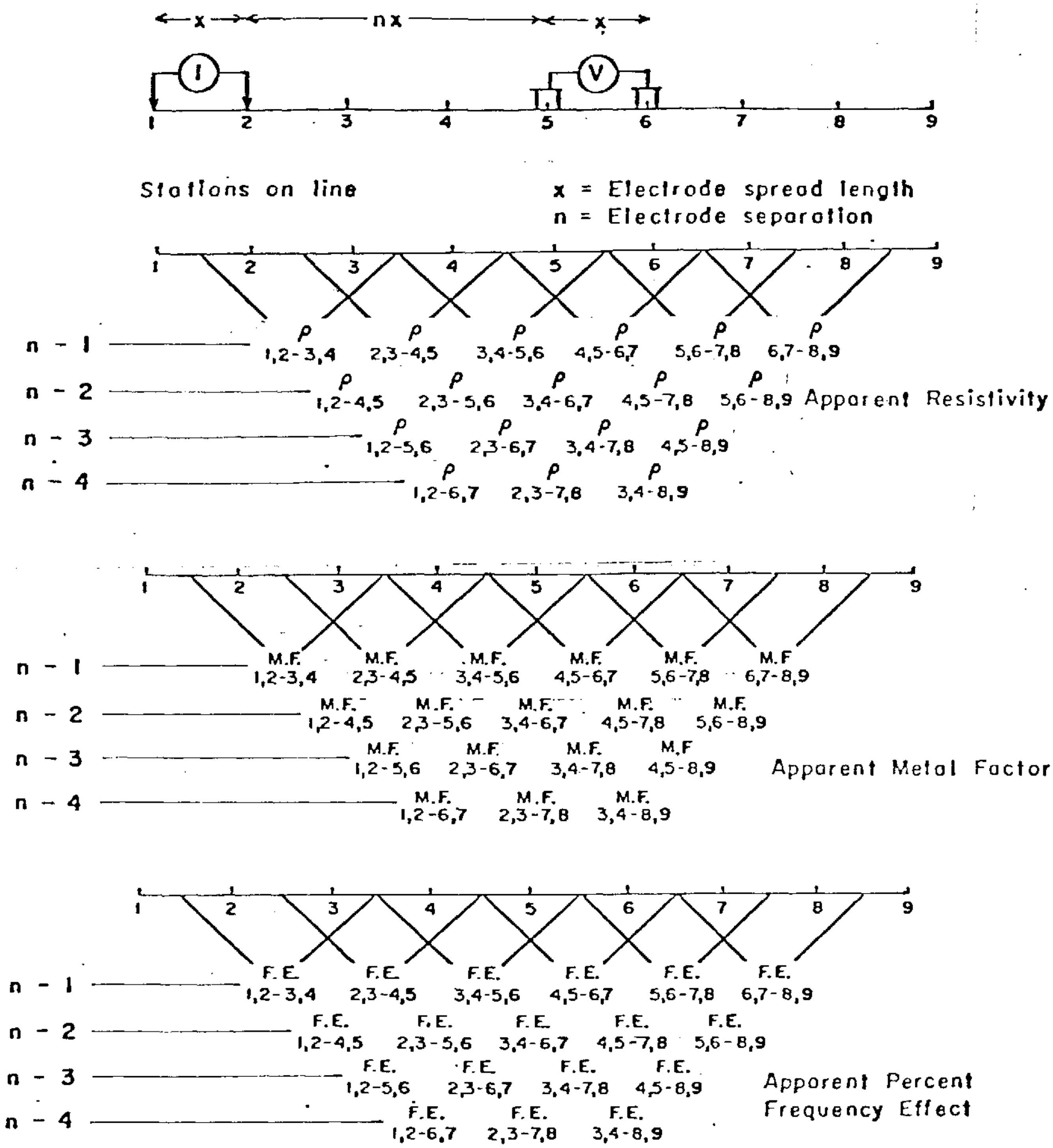

Fig. A

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REPORT ON THE
INDUCED POLARIZATION
AND RESISTIVITY SURVEY
WHITEMAN CREEK AREA
VERNON MINING DIVISION, B.C.
FOR
J.R. WOODCOCK CONSULTANTS LTD.

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1. INTRODUCTION

An Induced Polarization and Resistivity survey has been carried out on the Whiteman Claims for J.R. Woodcock Consultants Ltd. The Claims are located about 30 km southwest of Vernon on sheet 82L/4E in the Vernon Mining Division. The center of the claims is positioned at about 50°13' north latitude and 119°38' west longitude.

Access to the claims is by the Whiteman Creek Road which leads in to the area from near Okanagan Lake.

The object of the survey was to map the metallic mineral concentration under the Whiteman grid and if possible delimit the lateral extent of any IP anomalies.

The IP survey was commenced in June, 1979. Line 24N was extended and Line 4N was surveyed later in July, 1979. The survey was carried out under the supervision of Party Chief, John Marsh. His certificate of qualification is appended to this report.

A Phoenix frequency domain Model IPT-1, IPV-1, Induced Polarization system, was used for the survey operating at 0.31 and 5.0 Hz.

2. DESCRIPTION OF CLAIMS

Claim Data

Name	Record Number	Record Date	Assessment Credits (pre 1979)	Recorded Owner
Whiteman 1	329 (5)	May 30/77	4	Kennco Explorations (Canada) Ltd.
Whiteman 2	339 (6)	June 14/77	3	
Whiteman III	629	June 13/79	0	John R. Woodcock
Whit 1 to Whit 18	18010 (P) to 18027 (P)	Nov. 5/74	5	Can.Occidental Petroleum Ltd.
Whit 19	35 (11)	Nov. 3/75	5	" "
Whit 20, 21	176 (11), 177 (11)	Nov. 8/76	3	" "
Whit 22, 23	337 (6), 338 (6)	June 10/77	3	" "
Lock 1 to 4	593 (1) to 596 (1)	June 25/79	0	Cominco Ltd.
D & C 1 to 4	505 (8) to 508 (8)	Aug. 8/78	0	Charles Brett of Kelowna

The Whiteman 1 (6 units) and Whiteman 2 (18 units) claims were staked on May 28, 1977 and June 7, 1977 respectively by Gordon Davies and Gordon Kain for Kennco Explorations (Canada) Ltd. The two claims were grouped into the Whiteman #1 Group on May 23, 1978 and a geochemical report by R.L. Stevenson was submitted in 1978 for assessment work.

An extra nine units (Whiteman III claim) was staked by Paul Stanneck, agent for John R. Woodcock, west of Whiteman 2 on June 12, 1979 and recorded on June 13, 1979. This claim was added to the Whiteman Group on July 20, 1979.

3. PRESENTATION OF RESULTS

The Induced Polarization and Resistivity results are shown on the following enclosed data plots. The results are plotted in the manner described in the notes preceding this report.

Line	Electrode Interval	Dwg. No.
4N	300 feet	IP 5162-1
12N	300 feet	IP 5162-2
16N	300 feet	IP 5162-3
20N	300 feet	IP 5162-4
24N	300 feet	IP 5162-5
28N	300 feet	IP 5162-6
Base Line	300 feet	IP 5162-7

Also enclosed with this report is Dwg. I.P.P. 3070 a plan map of the Whiteman Creek Grid at a scale of 1" = 400'. The definite, probable and possible Induced Polarization anomalies are indicated by bars, in the manner shown on the legend, on this plan map as well as on the data plots. These bars represent the surface projection of the anomalous zones as interpreted from the location of the transmitter and receiver electrodes when the anomalous values were measured.

Since the Induced Polarization measurement is essentially an averaging process, as are all potential methods, it is frequently difficult to exactly pinpoint the source of an anomaly. Certainly, no anomaly can be located with more accuracy than the electrode interval length; i.e. when using 200' electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 200' apart. In order to definitely locate, and fully evaluate, a narrow, shallow source it is necessary to use shorter electrode intervals. In order to locate sources at some depth, larger electrode intervals must be used, with a corresponding increase in the uncertainties of location. Therefore, while the centre of the indicated anomaly probably corresponds fairly well with source, the length of the indicated anomaly along the line should not be taken to represent the exact edges of the anomalous material.

The topographical and grid information shown on Dwg. I.P.P. 3070 has been taken from maps made available by the staff of J.R. Woodcock Consultants Ltd.

4. DESCRIPTION OF GEOLOGY

Whiteman Creek crosses and exposes acid intrusive rocks, as a narrow east-west window, within flat-lying Tertiary volcanics of the Kamloops group.

Much of the intrusive is mapped as a granodiorite of Upper Mesozoic age. Locally it has abundant pyrite and is highly sericitized.

The Whiteman Creek stock lies to the east and is intrusive into the granodiorite. The intrusive is largely a syenite with porphyritic phases. Goethite linings in some vugs indicate that disseminated pyrite also occurs locally.

Monzonite porphyry forms a small portion of the Whiteman Creek stock. It resembles the matrix of the above-described porphyritic phase of the syenite.

5. DISCUSSION OF RESULTS

Apparent resistivity levels vary between 50 and 200 ρa/2π ohm feet under much of the survey grid. Resistivities in the 700-1000 range occur along the east grid boundary. The interpreted contact between moderate and higher magnitude resistivities is shown by a dashed line on Dwg. I.P.P. 3070.

Higher resistivity sections showing some depth to the source are evident on all survey lines. A number of these sections on successive lines have been correlated as a zone from Line 12N to Line 28N. The axis of this zone is indicated on Dwg. I.P.P. 3070 by a blue line.

Anomalous IP effects with varying magnitudes were recorded under the entire Whiteman grid and appear to extend beyond the grid in all directions. Most IP anomalies are shallow relative to the 300' electrode intervals.

Three rock specimens were tested for resistivity and frequency effect by Phoenix Geophysics. Results were as follows:

	Resistivity (ρa/2π ohm ft.)	Frequency Effect (%)	Metal Factor
Specimen #1	42	1.2	28.5
Specimen #2	115	2.1	18.3
Specimen #3	564	1.4	2.5

Specimen #1 was rusty and much of the metallic minerals have apparently been oxidized. It is presumed that a fresh equivalent of Speciment #1 would have had a higher frequency effect. Specimen #2 contains considerable disseminated pyrite that may be concentrated along fractures. Specimen #3 contains only a few specimens of pyrite.

A line by line description of the survey results follows.

Line 4N, Dwg. IP 5162-1

A deep resistivity high that corresponds roughly with a weak magnetic high is centred at 1300W.

Weak to moderate IP effects were recorded under the entire line. The strongest and best defined sections occur from 500E to 1100E and 1600W to 2200W.

Line 12N, Dwg. IP 5162-2

All of the line is weakly to moderately anomalous. The strongest part of the IP anomaly occurs between 200E and 1100E. It appears to have limited depth extent where it straddles the deep resistivity zone at 800E.

Line 16N, Dwg. 5162-3

Weak to moderate IP effects were recorded under the entire line. Moderately strong IP effects centered at 450E and 1050E could be a two-lobed pattern resulting from a single source between 600E and 900E. Resurveying with shorter electrode intervals would investigate this possibility.

Line 20N, Dwg. IP 5162-4

In addition to the deep resistivity high previously discussed, deep zones were outlined at 350W and 1700W.

All of the line is anomalous and strong IP effects were recorded west of 400E. The strong IP effects between 400E and 500W appear to have limited depth extent.

Line 24N, Dwg. IP 5162-5

Strong IP effects were outlined between 700E and 2600W with weaker sections centered at 2150W and 950W. Again there is limited depth extent where the strong response straddles a resistivity high between 100E and 800W. Weaker IP effects were encountered at the west end of the line.

Line 28N, Dwg. IP 5162-6

Line 28N was relatively short and all the line is anomalous. The IP anomaly has limited depth extent over the deep resistivity high east of 700E.

Base Line, Dwg. IP 516207

The Base Line which intersects all the above survey lines shows good general agreement with the geophysical results on the respective cross lines.

Weak to moderate magnitude IP effects were recorded under the entire base line and the IP anomalies apparently extend both north and south of the present survey grid. The strongest IP effects occur between 1400N and 2900N.

6. SUMMARY AND CONCLUSIONS

An Induced Polarization and Resistivity survey has been completed over part of the Whiteman Property. Varying magnitude IP anomalies occur under the entire survey grid.

A magnetometer survey demonstrates that the stronger IP effects occur in all magnetic environments. The maximum local magnetic relief is about 2000 gammas. The magnetite content of such an anomaly is not likely to be sufficient to cause the stronger IP effects unless it were unusually fine-grained. The magnetic anomaly near the west end of Line 20N and Line 24N would contribute to the recorded IP effect but other metallic mineralization would probably be necessary to explain the stronger anomalies.

The relatively sharp resistivity change near the east grid boundary indicates a less porous rock formation to the east. This may reflect the intrusive window. A number of deep resistivity highs, including the north trending zone, may reflect basement rocks beneath the volcanics. They are generally associated with weaker IP response. Since the mineral molybdenite contributes little to the recorded IP effects, weak anomalies can be important when molybdenite mineralization is suspected.

At least some of the stronger IP anomalies are believed to reflect altered pyritic volcanics. Laboratory tests of three rock specimens showed moderate response from Specimen #1 and weak response from Specimen #2.

It is recommended that all known geological, geochemical and geophysical conditions be correlated. Further investigation will depend largely on how these conditions fit this particular exploration model.

PHOENIX GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF
Expiry Date: February 25, 1980

Ashton W. Mullan, B.Sc. P.Eng.
Geologist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF
Expiry Date: February 25, 1980

Philip G. Hallof, Ph.D., P.Eng.

Dated: September 4, 1979

PART 1 OF 2

7397

ASSESSMENT DETAILS

PROPERTY: Whiteman Creek

MINING DIVISION: Vernon

SPONSOR: J.R. Woodcock Consultants Ltd.

PROVINCE: British Columbia

LOCATION: Vernon Area

TYPE OF SURVEY: Induced Polarization and Resistivity

OPERATING MAN DAYS:	7.5	DATE STARTED:	June 2, 1979
EQUIVALENT 8 HR. MAN DAYS:	11.25	DATE FINISHED:	July 29, 1979
CONSULTING MAN DAYS:	4.0	NUMBER OF STATIONS:	114
DRAFTING MAN DAYS:	6.0	NUMBER OF READINGS:	948
TOTAL MAN DAYS:	21.25	MILES OF LINE SURVEYED:	6.08

CONSULTANTS:

A.W. Mullan, 310 - 885 Dunsmuir Street, Vancouver, B.C.
P.G. Hallof, 15 Barnwood Court, Don Mills, Ontario.

FIELD TECHNICIANS:

J. Marsh, 310 - 885 Dunsmuir Street, Vancouver, B.C.
G. Richardson, 4161 Crown Crescent, Vancouver, B.C.
Extra Labourer:
P. Mullan, 1440 Sandhurst Place, West Vancouver, B.C.

DRAUGHTSMEN:

R.C. Norris, 3000 - 106 Victoria Park Ave. Willowdale, Ontario.
R.J. Pryde, R.R.#1, Sharon, Ontario.
P.J. Anderson, 40 Landfair Cres. Scarborough, Ontario.
B. Boden, R.R.#1, Omemee, Ontario.

PHOENIX GEOPHYSICS LIMITED

A.W. Mullan

Ashton W. Mullan, B.Sc, P.Eng.
Geologist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF

Expiry Date: February 25, 1980

Dated: September 4, 1979

STATEMENT OF COST

J.R. Woodcock Consultants Ltd. - IP Survey
Vernon Mining Division, B.C.

CREW: J. Marsh - G. Richardson

EXTRA LABOURER: P. Mullan

PERIODS: June 2 - 8 - July 26 - 29, 1979

7½ Operating days		@ $540.00/day	$4,050.00
Mobilization			1,100.00
EXPENSES:			
Vehicle	$306.70		
Meals & Accommodation	335.34		
Telephone	25.00		
Supplies	18.18		
	685.22		
+ 10%	68.52		
			753.74
EXTRA LABOUR:	220.00		
+ 20%	44.00		
			264.00
			$6,167.74

PHOENIX GEOPHYSICS LIMITED

Ashton W. Mullan, B.Sc., P.Eng.
Geologist

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — P. G. HALLOF

Expiry Date: February 25, 1980

Dated: September 4, 1979

CERTIFICATE

I, Ashton W. Mullan, of the City of Vancouver, in the Province of British Columbia, hereby certify:

1. That I am a geologist/geophysicist and a fellow of the Geological Association of Canada, Geophysics Division, with a business address at 310 - 885 Dunsmuir Street, Vancouver, B.C.

2. That I am registered as a member of the Association of Professional Engineers of the Provinces of Ontario and British Columbia.

3. That I hold a B.Sc. degree from McGill University.

4. That I have been practising my profession as a geologist/geophysicist for over twenty-five years.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of J.R. Woodcock Consultants Ltd., or any affiliate.

6. The statements made in this report are based on a study of published geological literature and unpublished private reports.

7. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

Dated at Vancouver

This 4th day of September, 1979

A.W. Mullan, B.Sc. P.Eng

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. A. HALLOF

Expiry Date: February 25, 1980

CERTIFICATE

I, Philip George Hallof, of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysicist residing at 15 Barnwood Court, Don Mills, Ontario.

2. I am a graduate of the Massachusetts Institute of Technology with a B.Sc. Degree (1952) in Geology and Geophysics, and a Ph.D. Degree (1957) in Geophysics.

3. I am a member of the Society of Exploration Geophysicists and the European Association of the Exploration Geophysicists.

4. I am a Professional Geophysicist, registered in the Province of Ontario, the Province of British Columbia and the State of Arizona.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of J.R. Woodcock Consultants Ltd., or any affiliate.

6. The statements made in this report are based on a study of published geological literature and unpublished private reports.

7. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

Dated at Toronto

This 4th day of September, 1979

Philip G. Hallof, Ph.D. P.Eng.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF

Expiry Date: February 25, 1980

CERTIFICATE

I, JOHN MARSH, of the Municipality of North York, Ontario, DO HEREBY CERTIFY THAT:

1. I am a geophysical crew leader residing at 200 Yorkland Blvd., Willowdale, Ontario.

2. I am a graduate of the City of Norwich Technical College, U.K., ordinary National Certificate (Electrical Engineering)

3. I worked with McPhar Geophysics Company from 1968 to 1975 as a geophysical crew leader.

4. I am presently employed as a geophysical crew leader by Phoenix Geophysics Ltd. of 1424 - 355 Burrard Street, Vancouver, B.C.

Dated at Vancouver, B.C.

This 29th Day of July, 1977

John Marsh

John Marsh

PHOENIX Geophysics Limited

200 YORKLAND BLVD., WILLOWDALE, ONTARIO, CANADA M2J 1R5

TELEPHONE (416) 493-6350
Cable Address: PHEXCO TORONTO

RECEIVED
Aug 3/79

INVOICE

August 2, 1979
INVOICE NO. 1493

Essex

J.R. Woodcock Consultants Ltd.
721 - 602 W. Hastings Street,
Vancouver, B.C.
V6B 1H4

Attention: Mr. J.R. Woodcock

REFERENCE: Contract Number PV 1037 - IP Survey
Vernon Mining Division, B.C.

CREW: J. Marsh - G. Richardson

PERIOD: June 2 - 8, 1979

5½ Operating		@ $540.00/day	$2,970.00
Mobilization			1,100.00
EXPENSES:			
Vehicle	$237.70		
Meals	69.05		
Supplies	18.18		
	324.93		
+ 10%	32.49		
			357.42
			$4,427.42
		Less deposit received on signing of contract	1,000.00
			$3,427.42

PHOENIX GEOPHYSICS LIMITED

Essex

Paid Aug 21/79
Ck # 0333
c/o 18

PHOENIX Geophysics Limited

200 YORKLAND BLVD., WILLOWDALE, ONTARIO, CANADA M2J 1R5

TELEPHONE (416) 493-6350
Cable Address: PHEXCO TORONTO

INVOICE

August 14, 1979
Invoice No. 1507

J.R. Woodcock Consultants Ltd.
721 - 602 W. Hastings Street,
Vancouver, B.C.
V6B 1H4

Attention: Mr. J.R. Woodcock

REFERENCE: Contract Number PV 1037 - IP Survey
Vernon Mining Division, B.C.

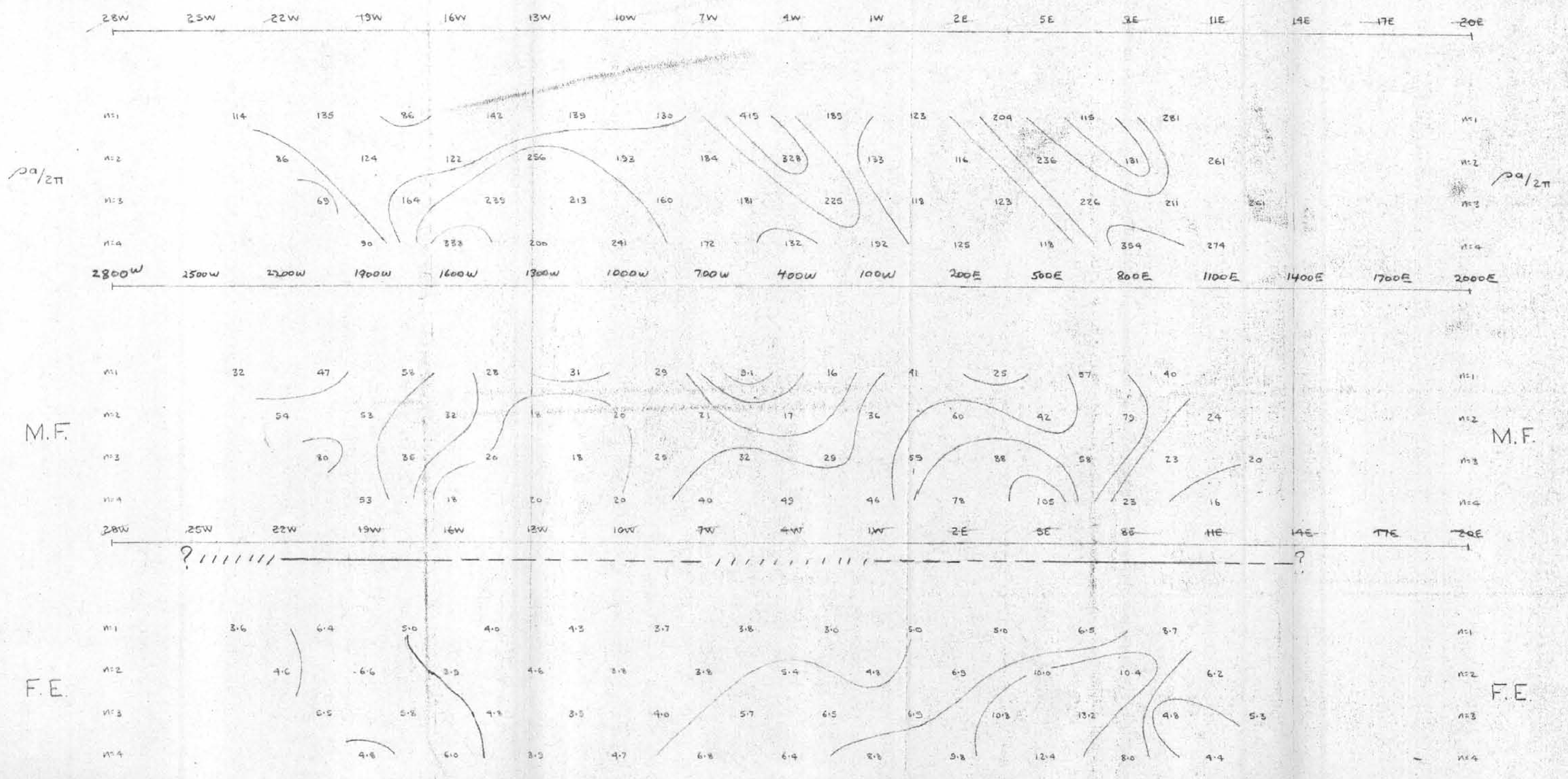
CREW: J. Marsh - G. Richardson

PERIOD: July 26 - 29, 1979

2 Operating days	@ $540.00/day		$1,080.00
EXPENSES:			
Vehicle	$ 69.00		
Meals & Accommodation	266.29	3 nights in Vernon for 3-man crew	
Telephone	25.00		
	360.29		
+ 10%	36.03		
			396.32
EXTRA LABOUR:	220.00		
+ 20%	44.00		
			264.00
			$1,740.32

PHOENIX GEOPHYSICS LIMITED

Paid Aug 28/79
Ck #0354
c/019



Dwg. No. - I.P. - 5162-1

J. R. Woodcock
Vernon Area, B.C.
Whiteman Creek Property
Line 4N
5 c.p.s. & .3 c.p.s.
Scale 1": 300 feet
July 1979
John Marsh

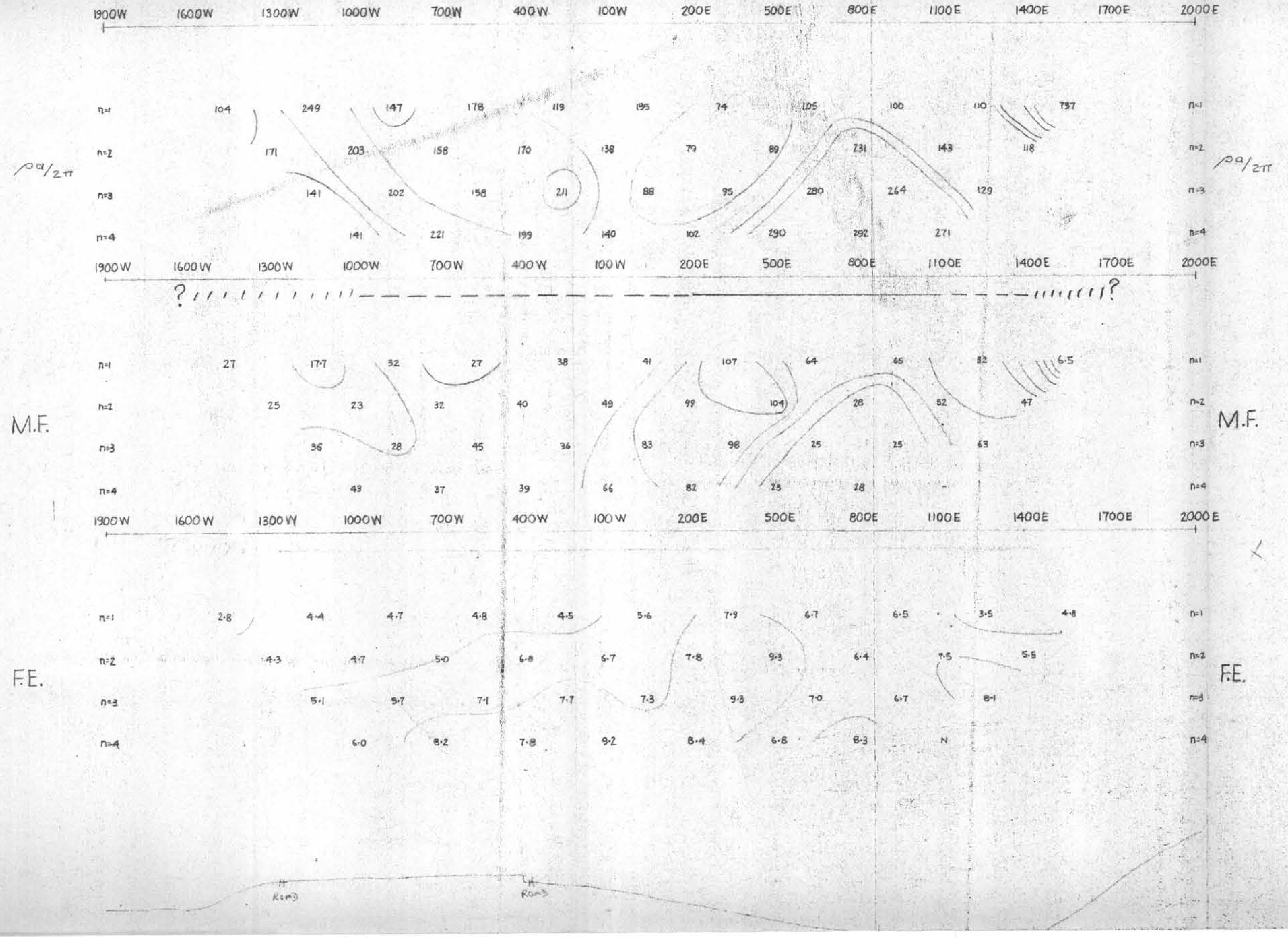
9/4/79

PROFESSIONAL
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF
ENGINEER

Expiry Date: February 25, 1980

Part 1 & 2

7397



DWG. No.- I.P.- 5162-2

J.R. WOODCOCK
VERNON AREA
WHITEMAN CREEK PROPERTY
LINE 12N
5 C.P.S. AND ·3 C.P.S.
SCALE 1": 300 FEET
JUNE 1979
JOHN MARSH

P.G. Hallof
9/4/79

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF
Expiry Date: February 25, 1980

PART 1 of 2

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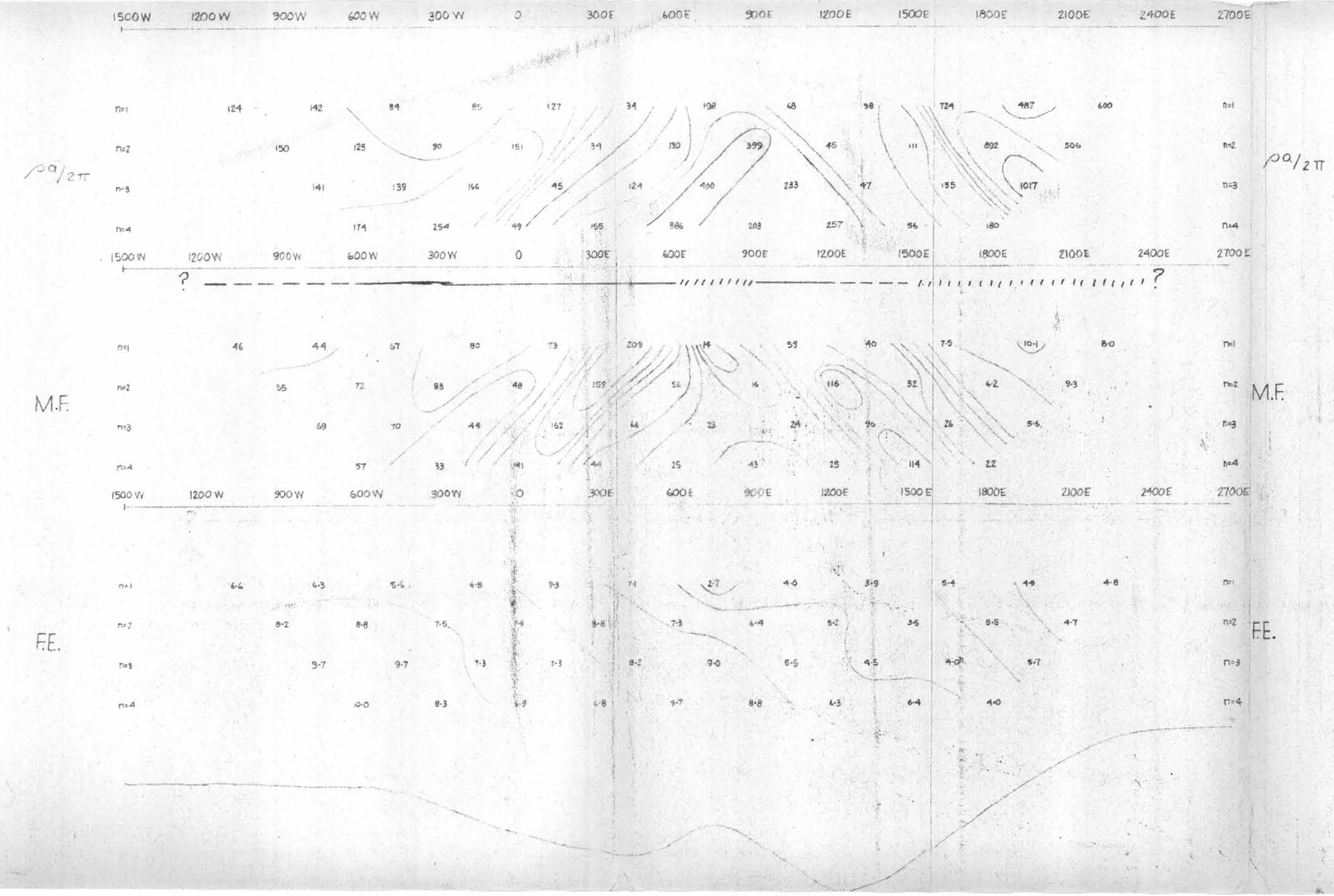


Dwg. No. - I.P. 5162-3

J.R. Woodcock
Vernon Area
Whiteman Creek Property
Line 16N
5 c.p.s. and ·3 c.p.s.
Scale 1": 300 feet
June 1979
John Marsh

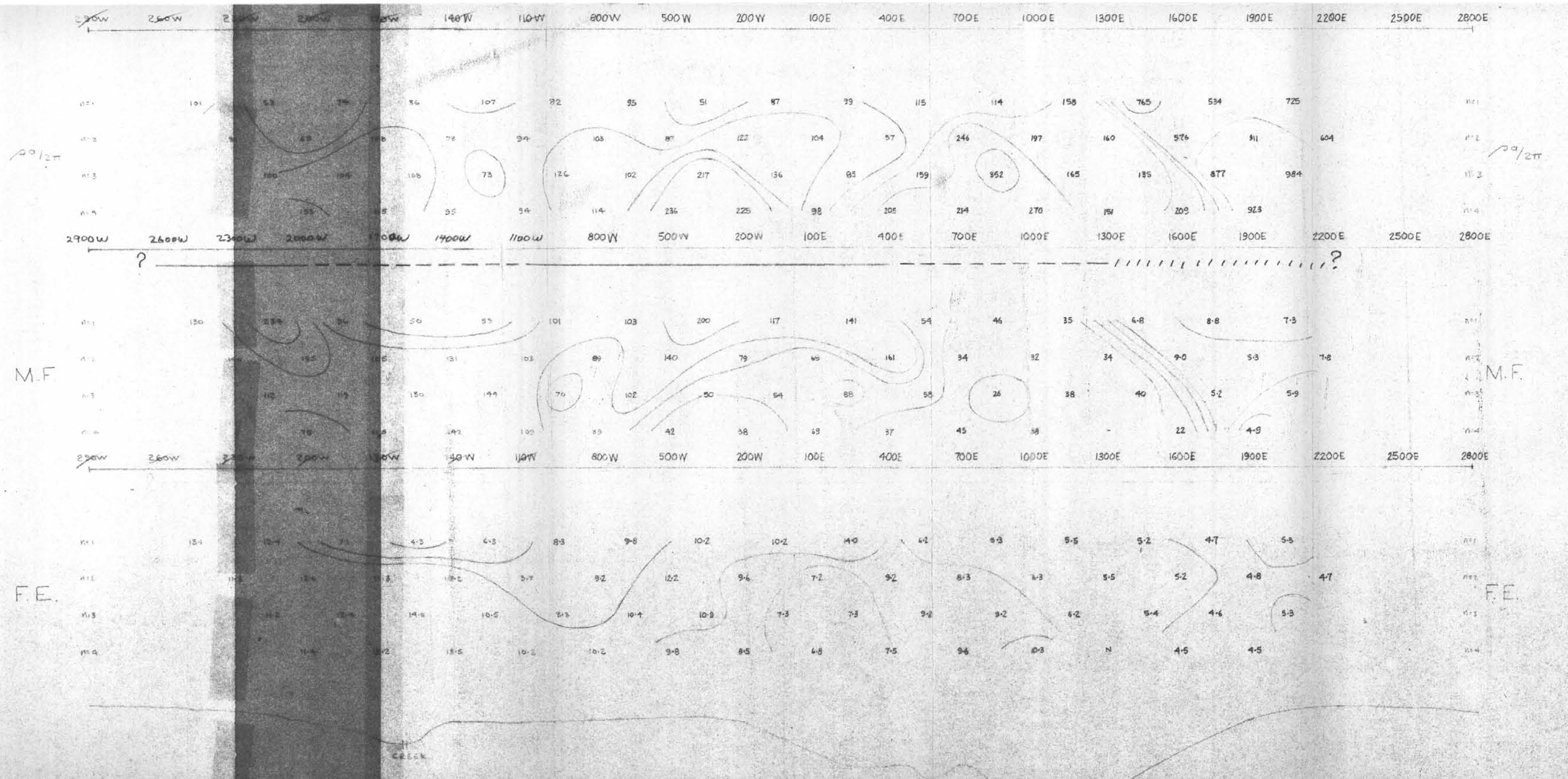
P.G. Hallof
9/4/79

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF

Expiry Date: February 25, 1980

PART 1&2

7397



Dwg. No. - I.P. - 5162-4

J.R. Woodcock
Vernon Area
Whiteman Creek Property
Line 20 N
5 c.p.s. and ·3 c.p.s.
Scale 1" : 300 feet
June 1979
John Marsh

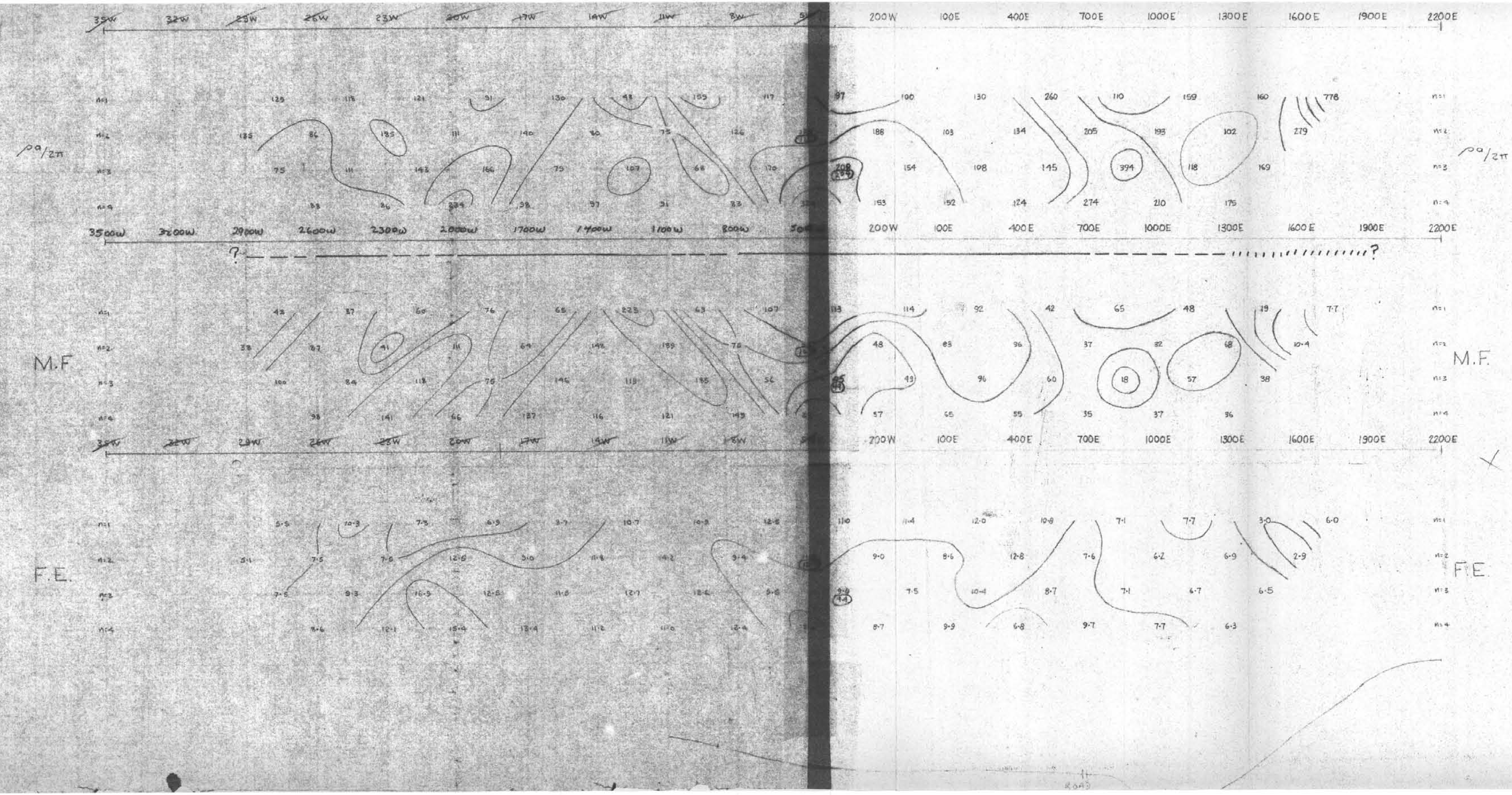
P. G. Hallof
9/4/79

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF

Expiry Date: February 25, 1980

Part 1 of 2

7397



Dwg. No.- I.P.-5162-5

J.R. Woodcock
Vernon Area
Whitemen Creek Property
Line 24 N
5 c.p.s. and ·3 c.p.s.
Scale 1" : 300 feet
June 1979
John Marsh

(116) - Repeated readings when survey extended.

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9/4/79
Expiry Date: February 25, 1980

PART 1 of 2

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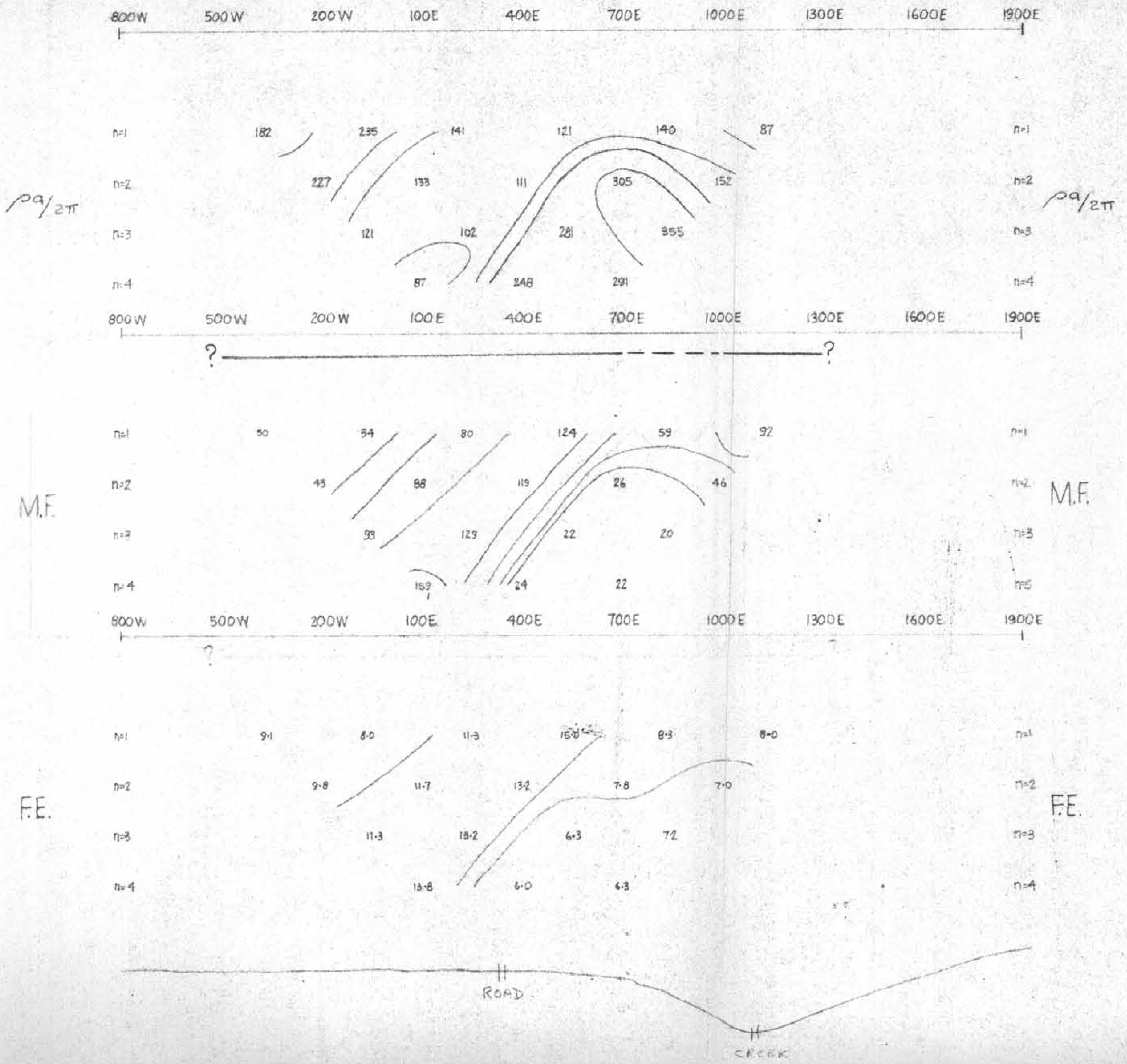

Dwg. No. - I.P. - 5162-6

J.R. Woodcock
Vernon Area
Whiteman Property
Line 28 N
5 c.p.s. and ·3 c.p.s.
Scale 1": 300 feet
June 1979
John Marsh

P. G. Hallof
9/4/79

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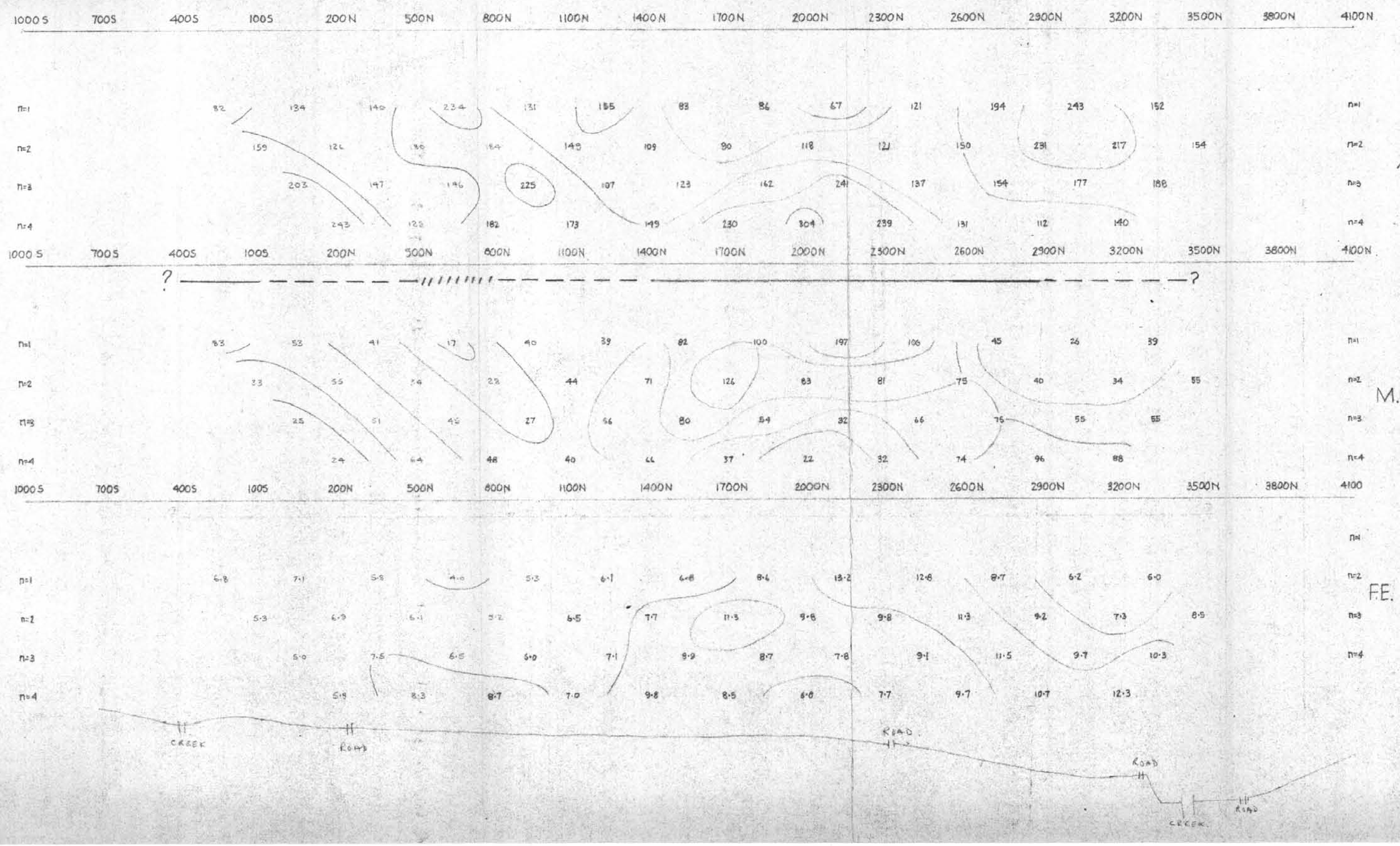
Expiry Date: February 25, 1980

PART 1 of 2

7397



Dwg. No.- I.P.- 5162-7

J.R. Woodcock
Vernon Area
Whiteman Creek Property
Baseline
5 cps. and ·3 c.p.s.
Scale 1" : 300 feet
June 1979
John Marsh

9/4/79

Professional Engineer
Province of British Columbia
G. Hallof

Expiry Date: February 25, 1980

PART 1&2

7397

Dwg. No. - I.P.P. - 3070

Dwg. No. - I.P.P. - 3070