MEAGER CREEK GEOTHERMAL PROJECT

B. C. HYDRO AND POWER AUTHORITY

Report on

D.C. RESISTIVITY SURVEY

in the

MEAGER CREEK GEOTHERMAL AREA

1980

by

Greg A. Shore

PREMIER GEOPHYSICS INC.

Vancouver, B. C.

April 28, 1981

Work conducted under authority of and in co-operation with: NEVIN SADLIER-BROWN GOODBRAND LTD., Consulting Geologists, Vancouver.

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1.0 Summary and Conclusions

The 1980 resistivity survey program in the Meager Creek Geothermal Area has identified new areas of anomalous resistivity and provided further definition of existing anomalies.

This report presents preliminary observations from the 1980 data; detailed analysis of the data is undertaken in a report now in preparation entitled "Co-ordination and Review of Resistivity Survey Results from the Meager Creek Geothermal Area, 1974 to present", by G. Shore and M. Schlax of Premier Geophysics Inc.

2.0 Introduction

In July, October, and November 1980, Premier Geophysics Inc. of Vancouver, B.C. conducted resistivity surveys in several portions of the Meager Creek Geothermal Area, 60 kilometres northwest of Pemberton, B.C.

New resistivity data were acquired along a portion of the upper Lillooet River valley, in the area south and south-east of the South Reservoir area, and near the main vent area on Meager Creek. springs or volcano

Survey specifications and instructions to proceed were provided by Nevin Sadlier-Brown Goodbrand Ltd., of Vancouver, acting on behalf of the British Columbia Hydro and Power Authority.

2.1 Program Management

The survey program was operated to specifications set forth in an operating agreement between Nevin Sadlier-Brown Goodbrand Ltd. and Premier Geophysics Inc., with the specifications approved in technical meetings between Premier, Nevin Sadlier-Brown Goodbrand, and representatives of B.C. Hydro.

Greg A. Shore of Premier Geophysics Inc. was responsible for the scientific conduct of the field survey, post-survey data reduction and analysis, and preparation of this report.

Overall project supervision was provided by Brian D. Fairbank, P. Eng., of Nevin Sadlier-Brown Goodbrand Ltd.

2.2 Objectives

The 1980 resistivity program was designed to provide additional geophysical information in several areas of the Meager complex. In the upper Lillooet valley, a continuous deep-penetration survey line was operated through several areas of interest which were defined in the 1979 work, and extended downstream past the Pebble Creek hot spring to connect with 1978 pole-pole survey information. On the south side of the complex, lines were installed to test for evidence of a proposed south-east extension of the South Reservoir and to examine at greater depths the area east of the Meager Creek hot springs.

3.0 Scope of this Report

This report provides a brief technical description of the survey method employed; for further detail the reader is referred to the report on 1979 drilling and exploration program (Fairbank et al., 1980).

Calculated field data are presented in conventional pseudosection form together with a preliminary interpretation.

At the time of preparation of this report, a comprehensive analysis of all resistivity data from the Meager area dating back to 1974 is being undertaken (Shore and Schlax, in preparation). This review report will apply interpretation criteria which reflect recent mapping and drilling results in the Meager area. The detailed interpretation of the 1980 survey lines is therefore deferred and will be provided in the review report which is scheduled for completion at the end of April, 1981.

4.0 Technical Description of the Survey

4.1 Electrode Configuration

A conventional dipole-dipole electrode array was applied, using a principal dipole spacing (a) of 300 metres and dipole separations (na) with n = 1 to as much as 15. In the Lillooet valley, simultaneous measurements using a dipole spacing (a) of 600 metres and dipole separations (na) with n = 1 through 7 were undertaken in order to test and compare the resolution of the two arrays at depths greater than 500 metres.

4.2 Instrumentation

The survey transmitter was a Phoenix Geophysics 3 kilowatt model IPT-1, providing a symmetrical polarity-reversing square wave output at 0.125 hertz. The receiver was a Hewlett-Packard 7155B strip chart recording microvoltmeter, recording the complete signal waveform and noise for later analysis and digitization. Signal buffering and self-potential compensation was accomplished with a Premier Geophysics PG-1A Differential Compensator. Porous pots with copper sulphate solution electrolyte and a copper core were used as potential electrodes for all measurements.

4.3 Data Processing

The field data record was hand digitized, in some cases with the aid of a mechanical method of filtering out telluric distrubances (Premier, 1979). Apparent resistivities were calculated according to the formula given in Appendix B. Data was plotted in Hallof-type pseudosections.

5.0 Interpretation

The pseudosection plots contained in this report show the measured data, the line topography, and an identification of areas of potential interest which will be investigated further in a report now in preparation entitled "Co-ordination and Review of Resistivity Survey Results from the Meager Creek Geothermal Area, 1974 to Present", by G. Shore and M. Schlax of Premier Geophysics Inc. A brief description of the areas of interest on each line follows:

5.1 Line V

The western part of line V spans the upper Lillooet valley from the break in slope at Job Creek diagonally across the valley to the break in slope at Salal Creek. This section of line was intended to provide coverage between 1979 anomalies A and B (Shore, 1979).

Beyond Salal Creek, the line continues down the side of the valley, passing north of the recent dacite flow and Pebble Creek hot springs. The line ends at the road rock cut at Lillooet River level (station 108E).

Between 12E and 24E is a zone of low resistivity at depth, overlain by an incompletely defined layer of higher resistivity. This zone corresponds with the 1979 anomaly A. The resistive unit which is seen at depth starting around 24E confirms the eastern limit of the anomalous zone, in agreement with 1978 line L. The possibility of the connection of anomaly A, at depth, with anomaly E to the north east, is denied by the observation of this resistive unit. The eastern boundary of the anomaly is therefore extended north across the end of line O.

Between 27E and 48E is a zone of very conductive near-surface materials overlying a more resistive bedrock unit which finally surfaces between 48E and 51E, near Salal Creek. The highly conductive near-surface areas, particularly from 30E to 33E and from 45E to 48E, are responsible for substantial distortions in the pseudosection picture. The diagonal "finger" of low resistivity extending east from 45E and 48E is an example; the interpreter will adjust these values upward by about 50%, in this case virtually eliminating this "anomaly".

The anomalous zone at depth beneath 58E to 71E remains valid, in spite of the distortions caused by near-surface conductive zones from 45E to 48E and from 78E to 84E. Compensation for these near-surface conditions does not eliminate the anomaly; it remains worthy of further examination.

From 83E to 97E is a possible anomalous zone, with the suggestion of a sloping, conductive unit dipping west from about 96E to depth at 86E. It is not possible to determine from the single line coverage whether there is a valid source of conductivity at depth or whether the entire anomaly is created by field distortions resulting from near-surface conductivities at 78E to 81E and 93E to 96E. The possible contribution from these near-surface conductivities is less clear than in the case further west on this line.

Substantial shallow to moderate depth conductivities are indicated east of 100E, and may be caused by a local accumulation of alluvial debris. A proper evaluation of this area can not be expected from end-of-line data.

5.2 Line V (a = 600 metres)

Pseudosections 6, 7 and 8 show data obtained with a dipole-dipole array, A = 600 metres, operated concurrently with the 300 metre array along line V. For purposes of comparison, the "definite anomaly" and "possible anomaly" interpretation bars from the a = 300 metres plots are reproduced on the a = 600 metres plots.

The a = 600 metres data are presented here without further comment; an analysis of the results of this test will be made in the review report (Shore and Schlax, 1981).

5.3 Line S

Line S contains two large and convoluted anomaly systems.

Between 142S and 167S lies an anomaly system which features a deep, apparently conductive anomaly beneath 146S, and a shallow anomaly centered at 160S. The two anomalies appear to be connected by a gently dipping conductive zone.

Test well M-12 was drilled in 1980 in part to test the anomaly centered at 146S. The hole yielded only a moderate temperature gradient, but encountered an artesian flow of water of a salinity about 3 or 4 times greater than that of seawater. The actual position of the measured anomaly source could actually be several hundred metres to either side of line S. This means that the hole at M-12 may not be directly testing the temperature regime associated with the anomaly, if indeed a substantial temperature gradient is responsible for the anomaly. The discovery of the highly saline waters provides an alternate explanation for the anomaly, but leaves open the possibility that test well M-12 is sampling a cooled, saline brine outflow from a hot reservoir located some distance away. This question is dealt with in detail in the review report (Shore and Schlax, in preparation).

The anomaly system which extends from the northern limit of line S to 134S is also examined in detail in the review report (Shore and Schlax, in prep.). This anomaly system contains extreme electric field distortions, and for the present report, the following few brief observations are offered pending further study.

The low values (including 0 ohm-metres apparent resistivity) around n = 8, 112S are diagnostic of a twisting of the electric field due to preferential current flow along narrow, probably steeply dipping conductive structures which extend close to surface in the vicinity of line S at 124S to 127S and at 97S to 100S. There is clearly a complex three-dimensional structural geometry in this area, probably involving two distinct nearly vertical, planar, conductive units which intersect on one side of the line of the other. To the north such a unit could be a zone of fractures or intense alteration associated with the contact between the Spidery Peak pluton and the quartz diorite, or a fault structure associated with the local axis of Meager Creek. The southerly unit which appears to be observed at 124S to 127S may be a fault structure. The intersection of these two planes could be either to the east or west of line S.

Interpretation of virtually all of the anomalous areas reported at n = 3 or greater between 118S and 100S has to wait until further research is done. However the anomalous zone between 118S and 133S retain some identifiable validity; indeed the pseudosection data offers no immediate models which can eliminate this part of the anomaly. Further geophysics in this area will be recommended; however, any preliminary drill testing in the area would be most beneficially sited at 125S directly on line S. A drill hole at this position may offer some chance of intersecting the steeply dipping conductive unit suspected to surface near there, and will at the same time penetrate towards a possible source location for the anomalous readings at n = 10 and n = 11 at 124S.

5.4 Line T

Line T departs from Line S at 137S and swings west across the South Fork of Meager Creek. It climbs up on the quartz diorite edifice directly south of the South Reservoir area and terminates in the cap of volcanic flow rocks situated at the west end of the edifice.

The pseudosection (figure 11) shows some of the line S data as a background reference for the position of array electrodes responsible for the eastern line T information.

Centered at 9E to 12E is a strong anomaly reporting from the South Fork valley area. The relationship of this anomaly to test well M12, and to anomalies on line S and line C is explored further in the review report (Shore and Schlax, in preparation).

As the line rises out of the valley, rock resistivities rise to a mode of about 400 ohm metres, typical of the South Reservoir area quartz diorites in a cool and moderately fractured state. At 24W can be seen the start of higher resistivities related to the volcanic flow rocks at surface and possibly to a decreased temperature and lesser degree of fracturing in the host quartz diorites.

This line is subject to extreme topographic influences, and these are not considered in detail in this interim report.

5.5 Line U

Line U was operated across the Meager Creek valley near the bridge by the Main Vent Hot Springs area. The data are presently being calculated and appear to be substantially compromised by the extreme topography of the line route.

Available information from this line will be detailed in the review report (Shore and Schlax, 1981).

Respectfully Submitted,
PREMIER GEOPHYSICS INC.
Greg A. Shore

April 28, 1981

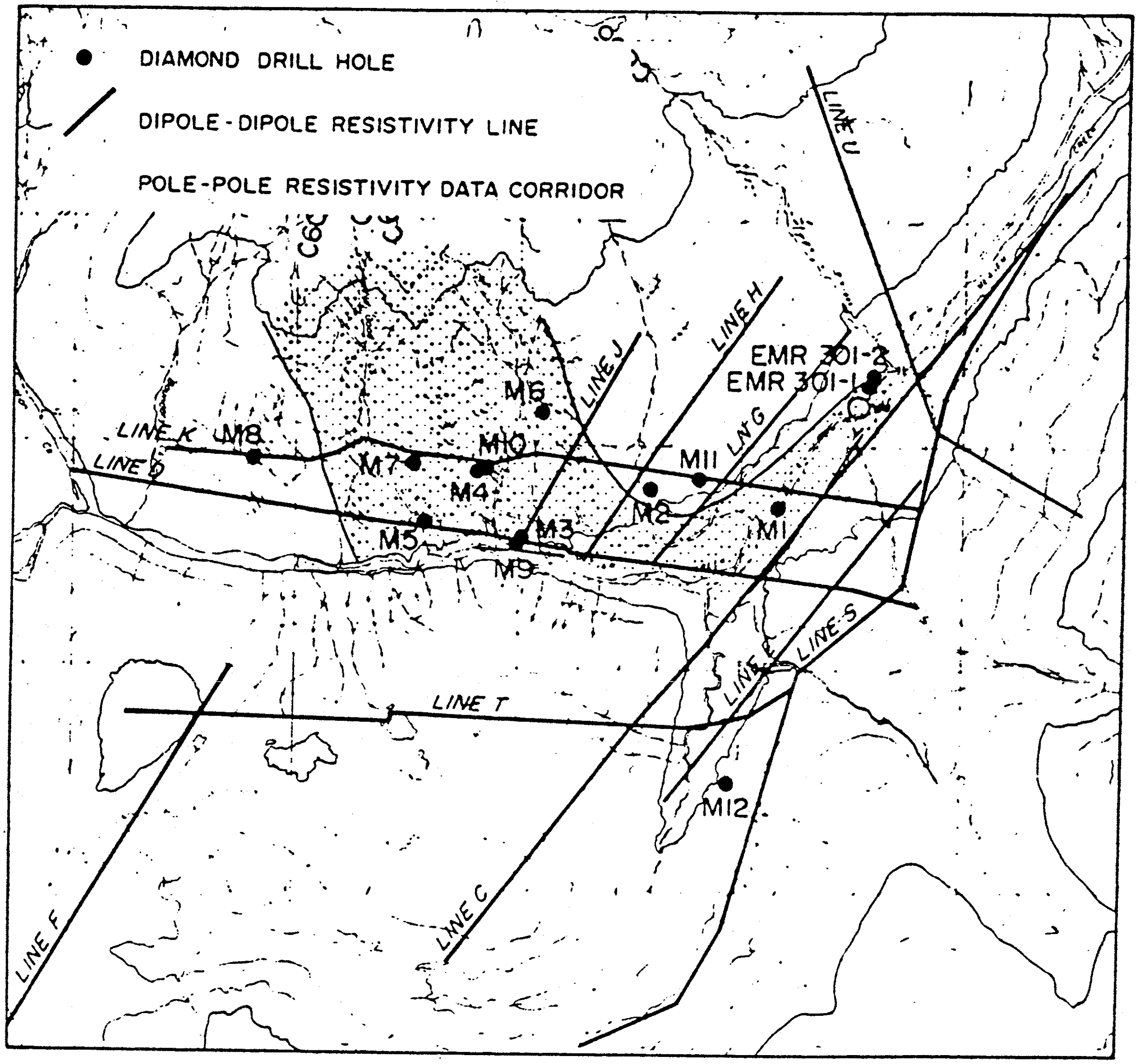


Figure 1

Location of 1980 resistivity survey lines S, T, and U at South Reservoir area, Meager Creek Geothermal Project.

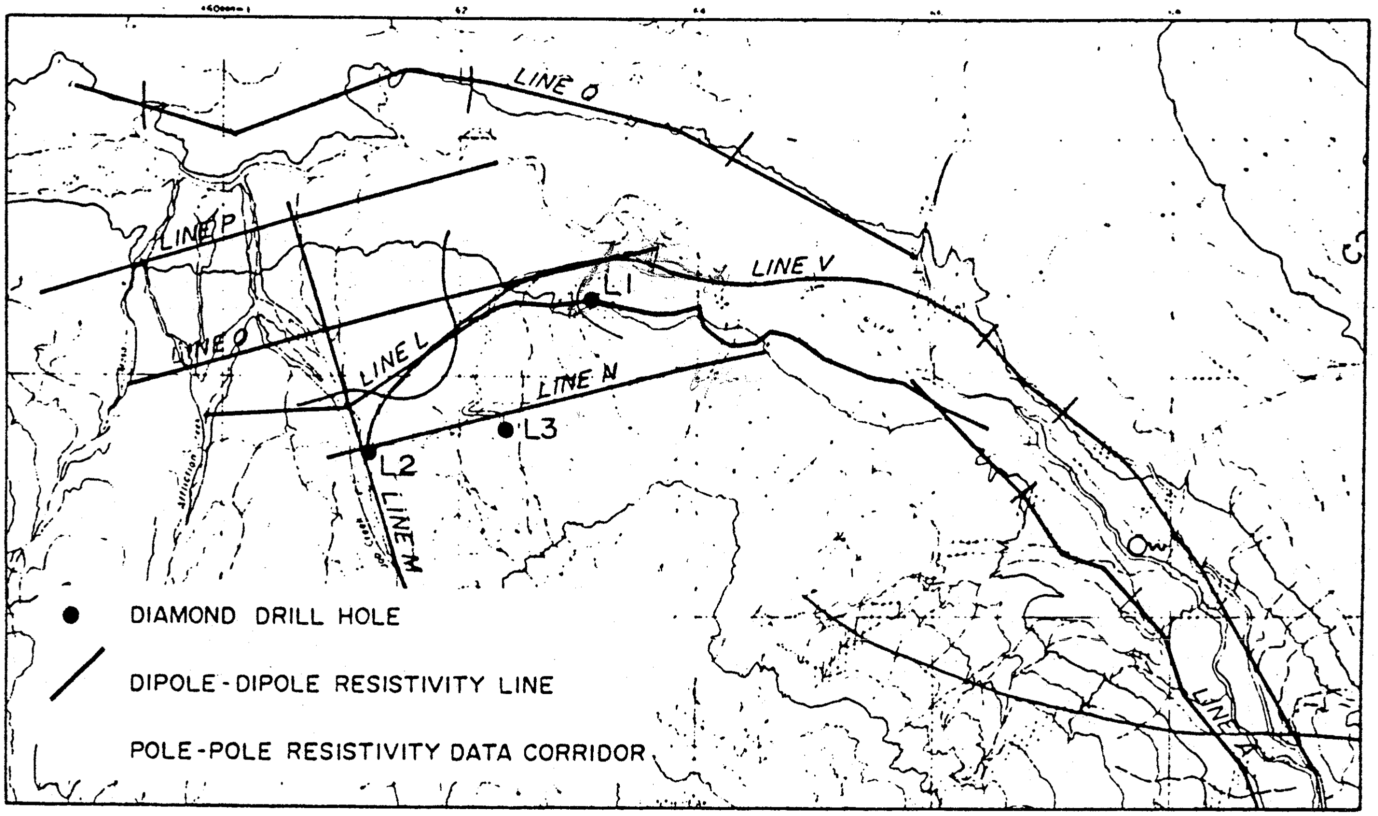
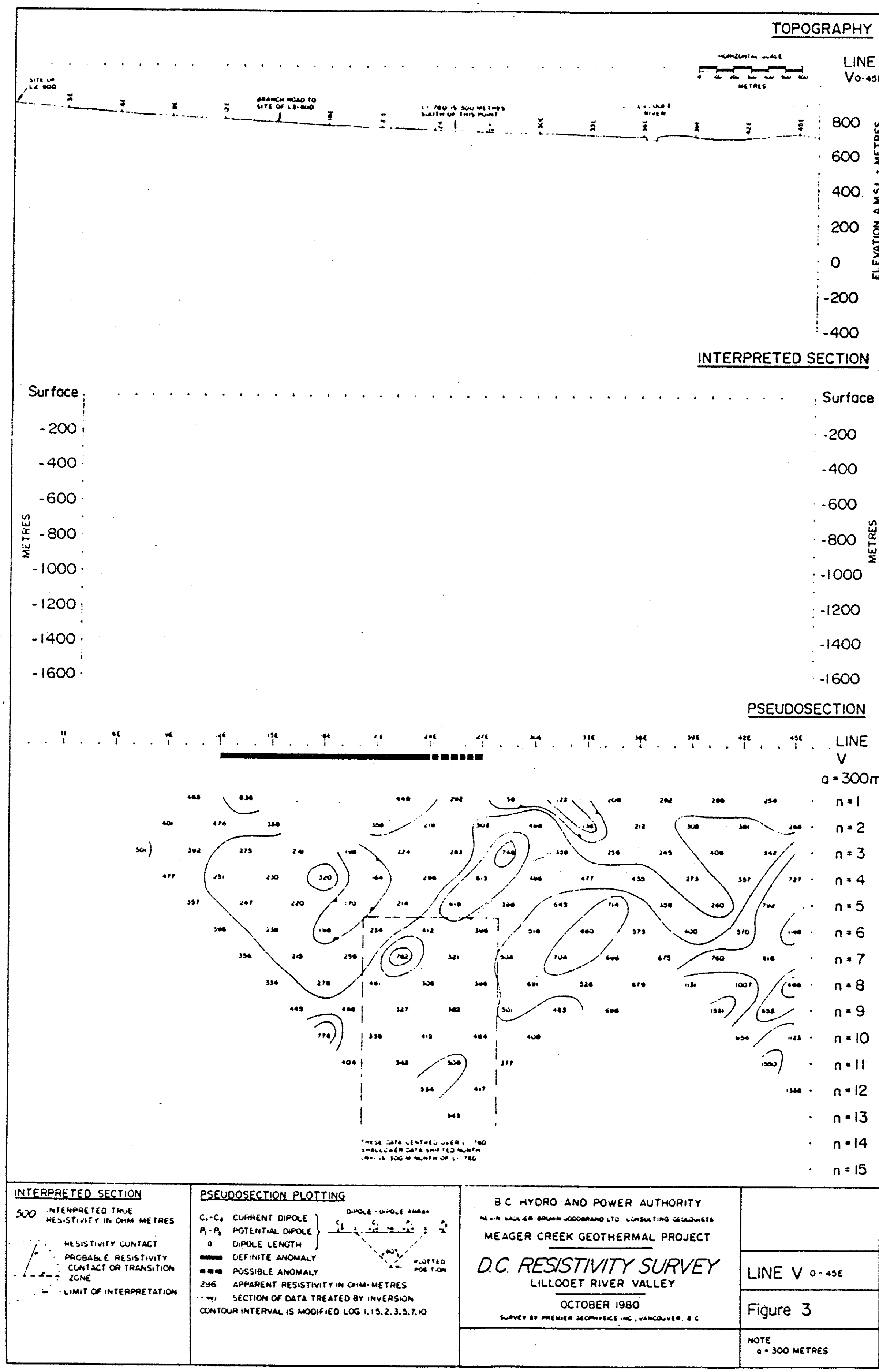
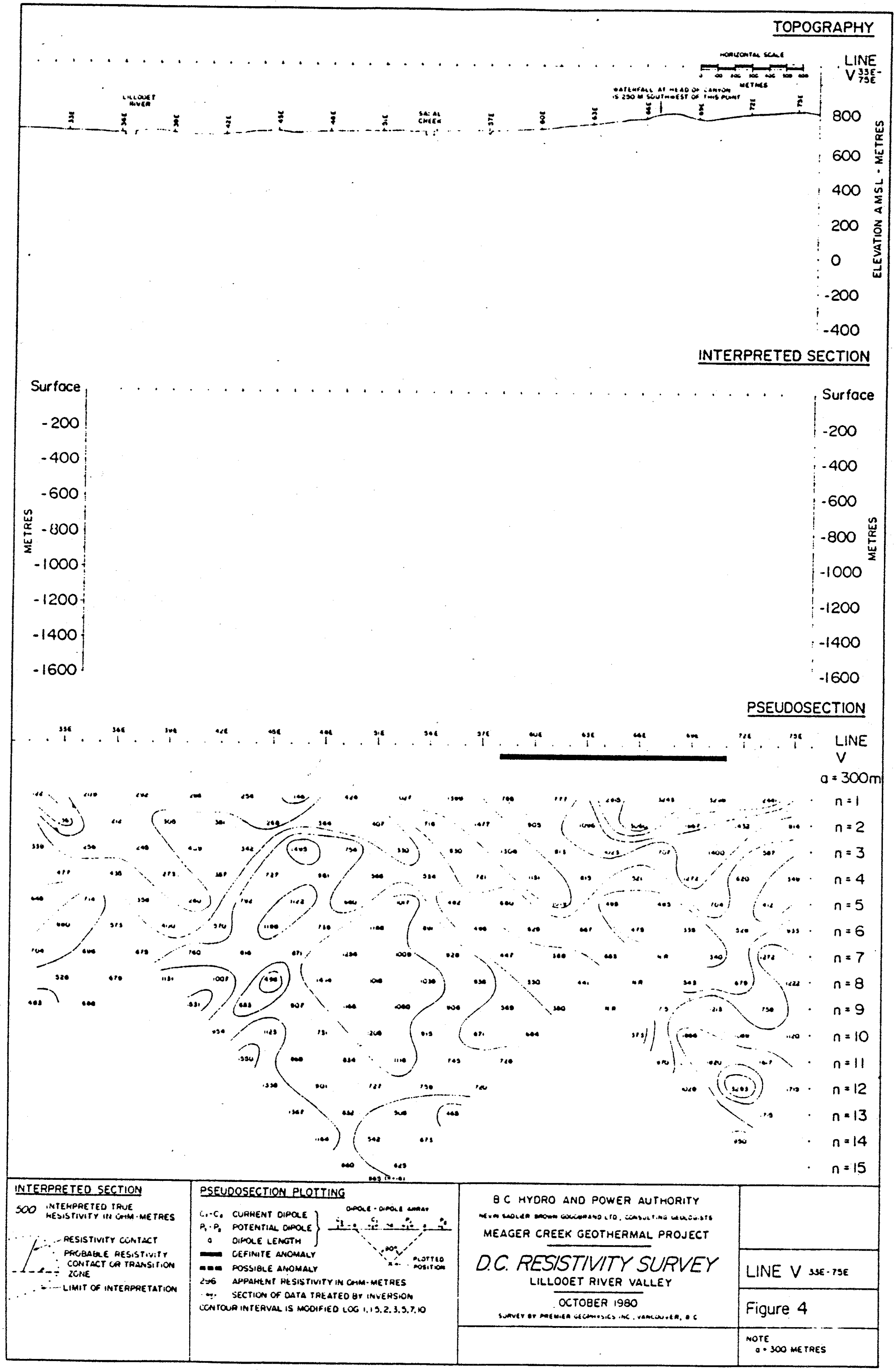


Figure 2

Location of 1980 resistivity survey line V at North Anomaly area, Meager Creek Geothermal Project.



TOPOGRAPHY
LINE
V0-45E
HORIZONTAL SCALE
METRES
BRANCH ROAD TO SITE OF LB-800
ELEVATION A.M.S.L. - METRES
800
600
400
200
0
-200
-400
INTERPRETED SECTION
Surface
-200
-400
-600
-800
-1000
-1200
-1400
-1600
METRES
PSEUDOSECTION
LINE
V
a = 300m
n = 1
n = 2
n = 3
n = 4
n = 5
n = 6
n = 7
n = 8
n = 9
n = 10
n = 11
n = 12
n = 13
n = 14
n = 15
INTERPRETED SECTION
500 INTERPRETED TRUE RESISTIVITY IN OHM METRES
RESISTIVITY CONTACT
PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE
LIMIT OF INTERPRETATION
PSEUDOSECTION PLOTTING
DIPOLE - DIPOLE ARRAY
C1-C2 CURRENT DIPOLE
P1-P2 POTENTIAL DIPOLE
a DIPOLE LENGTH
DEFINITE ANOMALY
POSSIBLE ANOMALY
296 APPARENT RESISTIVITY IN OHM-METRES
SECTION OF DATA TREATED BY INVERSION
CONTOUR INTERVAL IS MODIFIED LOG 1, 1.5, 2, 3, 5, 7, 10
PLOTTED POSITION
B C HYDRO AND POWER AUTHORITY
MEAGER CREEK GEOTHERMAL PROJECT
D.C. RESISTIVITY SURVEY
LILLOOET RIVER VALLEY
OCTOBER 1980
SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.
LINE V 0-45E
Figure 3
NOTE
a = 300 METRES


TOPOGRAPHY
LINE V 33E-75E
HORIZONTAL SCALE
METRES
WATERFALL AT HEAD OF CANYON IS 250 M SOUTHWEST OF THIS POINT
LILLOOET RIVER
SALAL CREEK
800
600
400
200
0
-200
-400
ELEVATION AMSL - METRES
INTERPRETED SECTION
Surface
-200
-400
-600
-800
-1000
-1200
-1400
-1600
METRES
PSEUDOSECTION
LINE V
a = 300m
n = 1
n = 2
n = 3
n = 4
n = 5
n = 6
n = 7
n = 8
n = 9
n = 10
n = 11
n = 12
n = 13
n = 14
n = 15
INTERPRETED SECTION
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LIMIT OF INTERPRETATION
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DIPOLE - DIPOLE ARRAY
C1-C2 CURRENT DIPOLE
P1-P2 POTENTIAL DIPOLE
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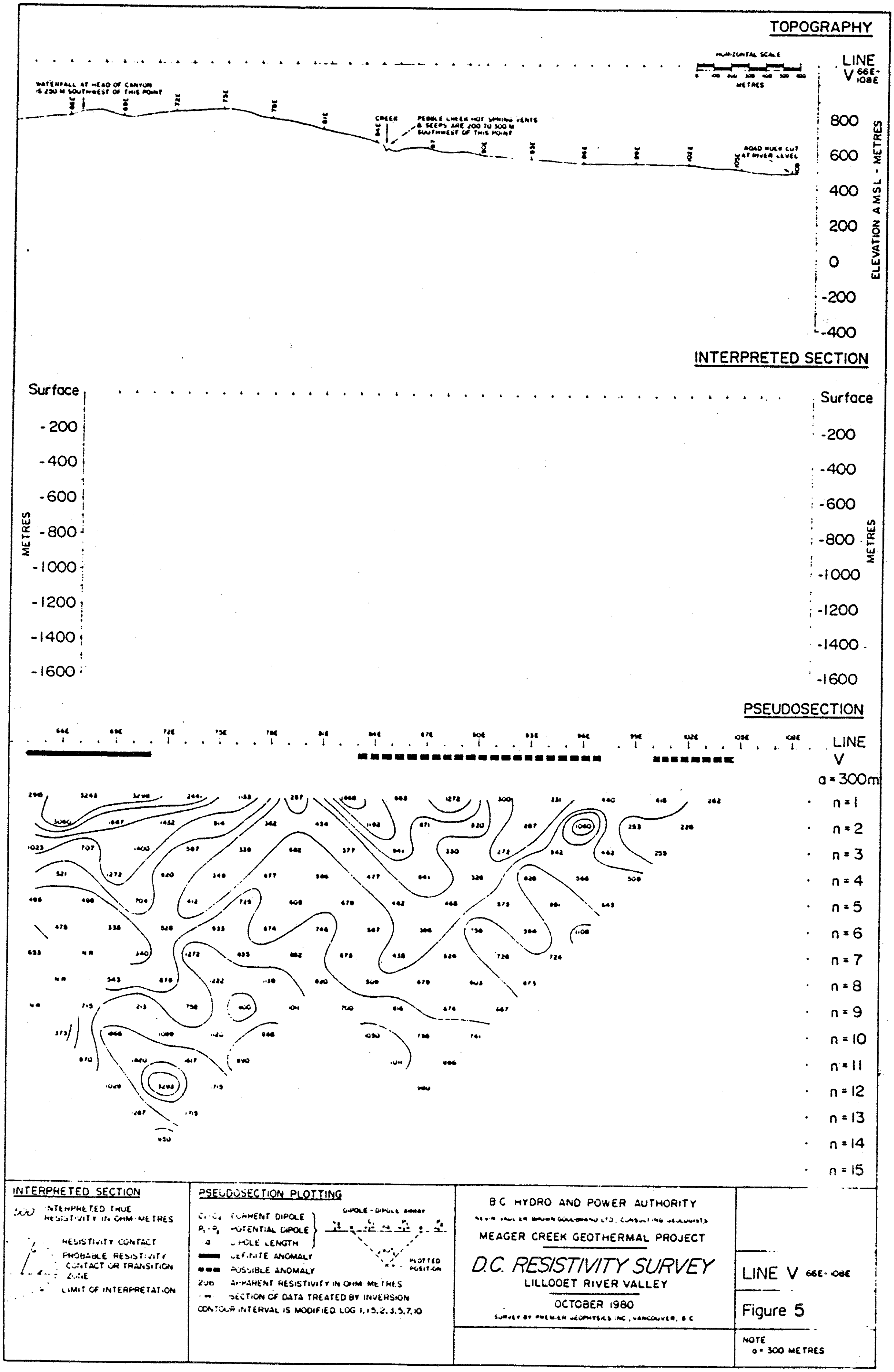
B C HYDRO AND POWER AUTHORITY
NEVIN SADLIER BROWN GOODBRAND LTD., CONSULTING GEOLOGISTS
MEAGER CREEK GEOTHERMAL PROJECT
D.C. RESISTIVITY SURVEY
LILLOOET RIVER VALLEY
OCTOBER 1980
SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.
LINE V 33E-75E
Figure 4
NOTE
a = 300 METRES



TOPOGRAPHY
HORIZONTAL SCALE
METRES
LINE V 66E-108E
WATERFALL AT HEAD OF CANYON IS 250 M SOUTHWEST OF THIS POINT
CREEK
PEBBLE CREEK HOT SPRING VENTS & SEEPS ARE 200 TO 300 M SOUTHWEST OF THIS POINT
ROAD ROCK CUT AT RIVER LEVEL
800
600
400
200
0
-200
-400
ELEVATION A.M.S.L. - METRES
INTERPRETED SECTION
Surface
-200
-400
-600
-800
-1000
-1200
-1400
-1600
METRES
PSEUDOSECTION
LINE V
a = 300m
n = 1
n = 2
n = 3
n = 4
n = 5
n = 6
n = 7
n = 8
n = 9
n = 10
n = 11
n = 12
n = 13
n = 14
n = 15
INTERPRETED SECTION
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RESISTIVITY CONTACT
PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE
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DIPOLE - DIPOLE ARRAY
CURRENT DIPOLE
POTENTIAL DIPOLE
DIPOLE LENGTH
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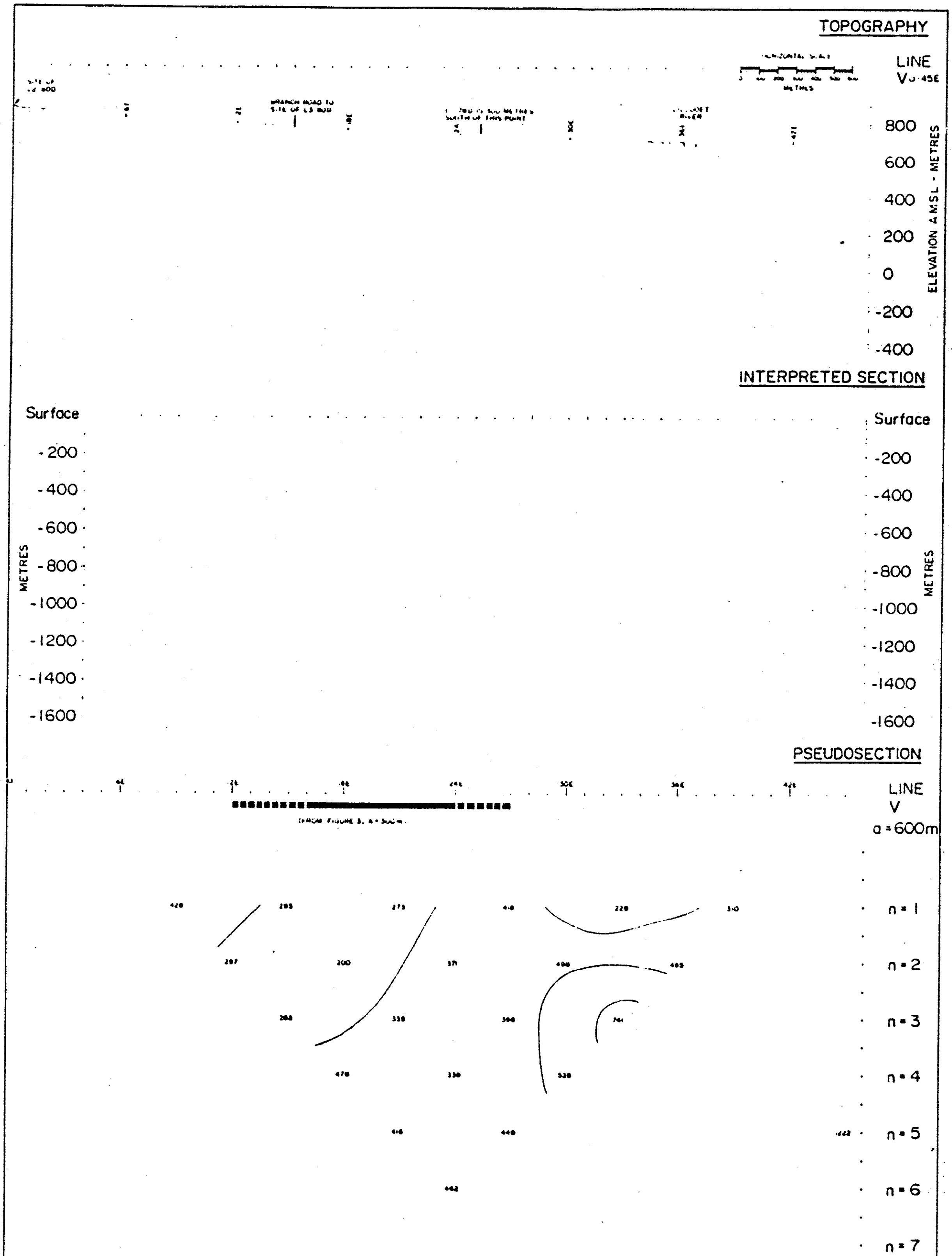
SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.
LINE V 66E-108E
Figure 5
NOTE
a = 300 METRES



INTERPRETED SECTION

500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES

RESISTIVITY CONTACT

PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE

LIMIT OF INTERPRETATION

PSEUDOSECTION PLOTTING

C_1-C_2 CURRENT DIPOLE

P_1-P_2 POTENTIAL DIPOLE

a DIPOLE LENGTH

DEFINITE ANOMALY

POSSIBLE ANOMALY

296 APPARENT RESISTIVITY IN OHM-METRES

SECTION OF DATA TREATED BY INVERSION

CONTOUR INTERVAL IS MODIFIED LOG 1, 1.5, 2, 3, 5, 7, 10

DIPOLE - DIPOLE ARRAY

PLOTTED POSITION

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D.C. RESISTIVITY SURVEY

LILLOOET RIVER VALLEY

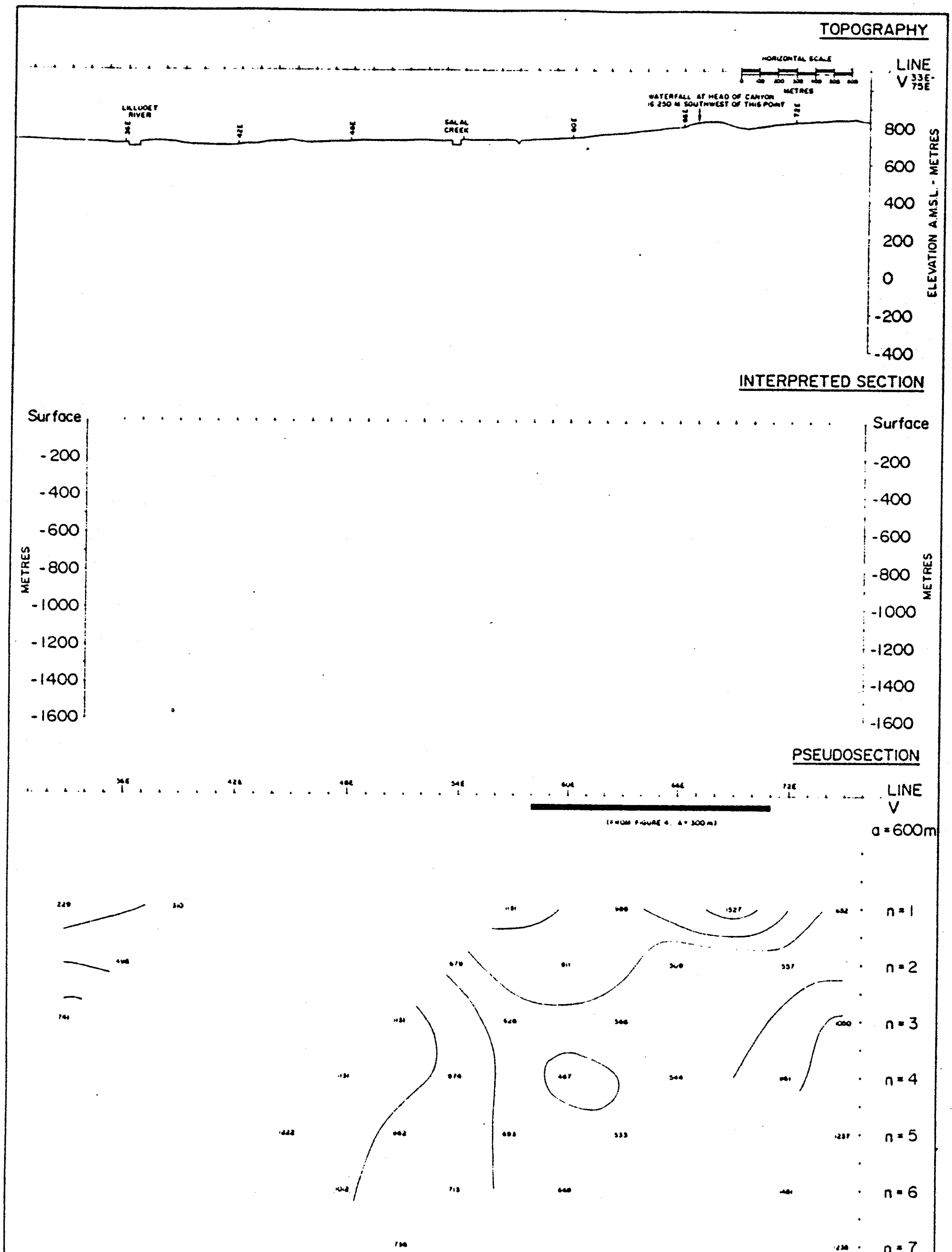
OCTOBER 1980

SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.

LINE V 0-45E

Figure 6

NOTE.
a = 600 METRES



INTERPRETED SECTION

500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES

RESISTIVITY CONTACT

PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE

LIMIT OF INTERPRETATION

PSEUDOSECTION PLOTTING

C_1-C_2 CURRENT DIPOLE
P_1-P_2 POTENTIAL DIPOLE
a DIPOLE LENGTH

DIPOLE - DIPOLE ARRAY

PLOTTED POSITION

DEFINITE ANOMALY

POSSIBLE ANOMALY

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LILLOOET RIVER VALLEY

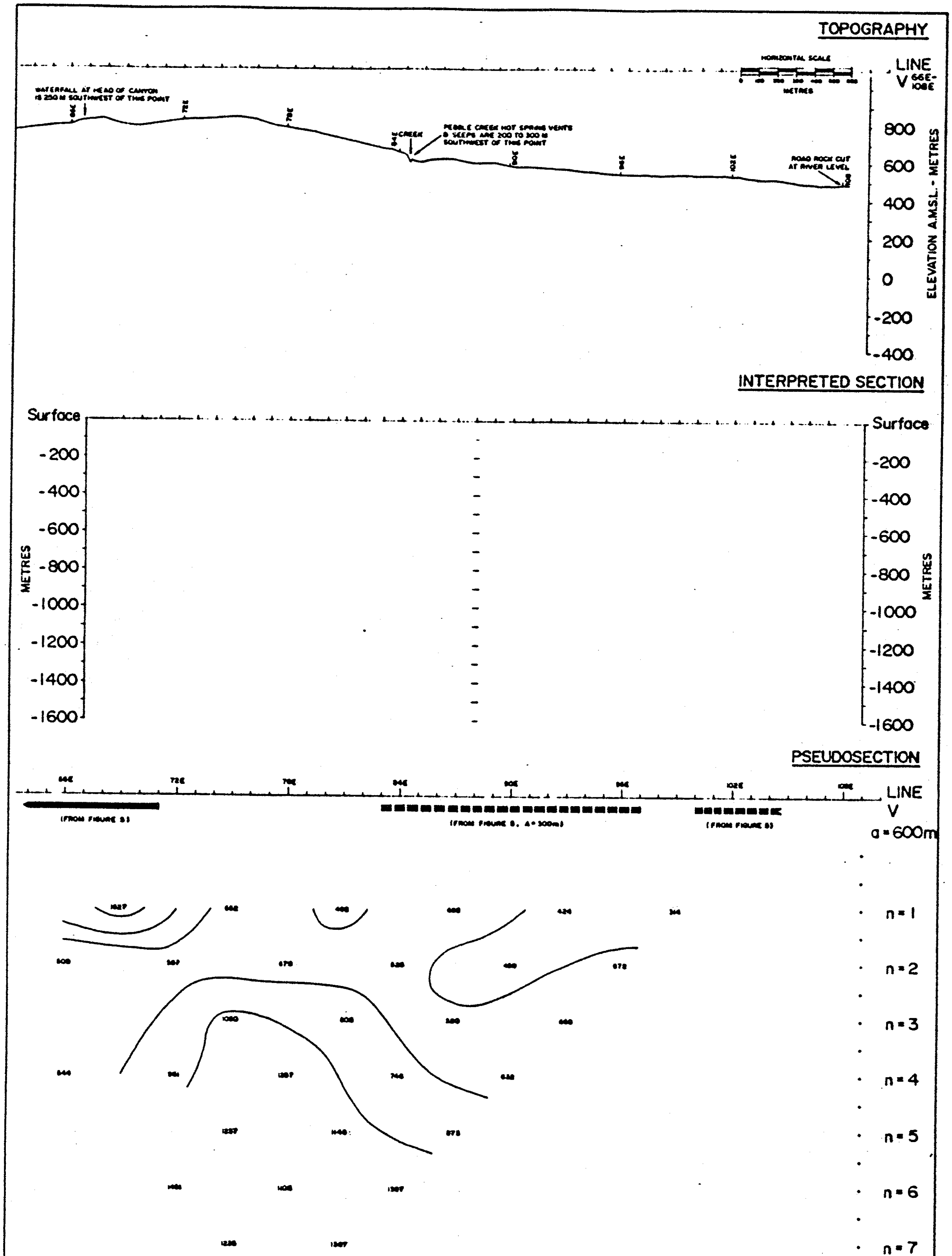
OCTOBER 1980

SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B C

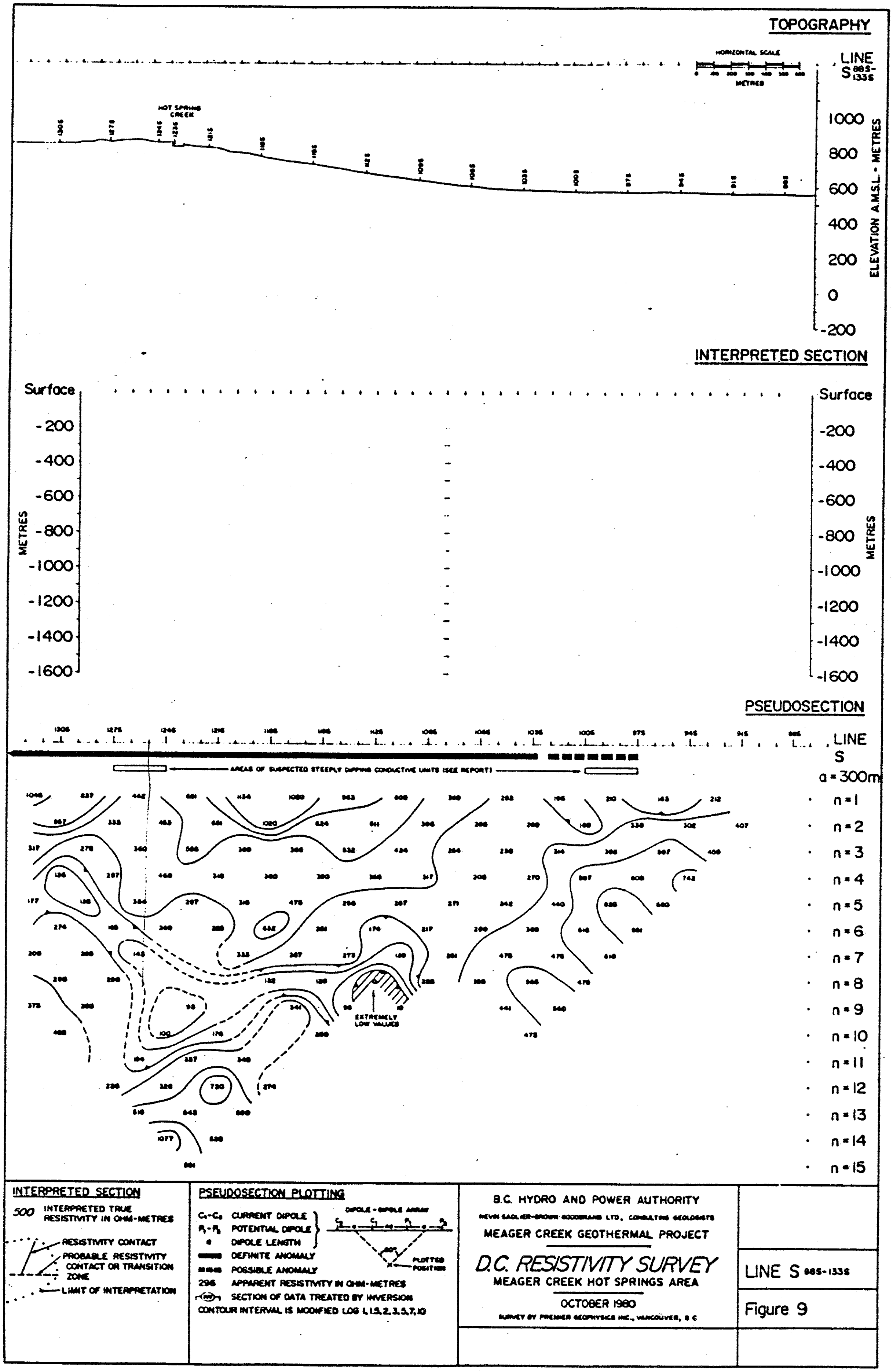
LINE V 33E-75E

Figure 7

NOTE
a = 600 METRES



INTERPRETED SECTION	PSEUDOSECTION PLOTTING		
500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES RESISTIVITY CONTACT PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE LIMIT OF INTERPRETATION	C_1-C_2 CURRENT DIPOLE P_1-P_2 POTENTIAL DIPOLE a DIPOLE LENGTH DEFINITE ANOMALY POSSIBLE ANOMALY 296 APPARENT RESISTIVITY IN OHM-METRES SECTION OF DATA TREATED BY INVERSION CONTOUR INTERVAL IS MODIFIED LOG 1, 1.5, 2, 3, 5, 7, 10 DIPOLE - DIPOLE ARRAY PLOTTED POSITION	B.C. HYDRO AND POWER AUTHORITY NEVIN SADLIER-BROWN GOODBRAND LTD., CONSULTING GEOLOGISTS MEAGER CREEK GEOTHERMAL PROJECT *D.C. RESISTIVITY SURVEY* LILLOOET RIVER VALLEY OCTOBER 1980 SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.	LINE V 66E-108E Figure 8 NOTE: a = 600 METRES


TOPOGRAPHY
LINE S 985-1335
HORIZONTAL SCALE
METRES
HOT SPRING CREEK
ELEVATION A.M.S.L. - METRES
1000
800
600
400
200
0
-200
INTERPRETED SECTION
Surface
-200
-400
-600
-800
-1000
-1200
-1400
-1600
METRES
PSEUDOSECTION
LINE S
a = 300m
AREAS OF SUSPECTED STEEPLY DIPPING CONDUCTIVE UNITS (SEE REPORT)
EXTREMELY LOW VALUES
n = 1
n = 2
n = 3
n = 4
n = 5
n = 6
n = 7
n = 8
n = 9
n = 10
n = 11
n = 12
n = 13
n = 14
n = 15
INTERPRETED SECTION
500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES
RESISTIVITY CONTACT
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P1-P2 POTENTIAL DIPOLE
a DIPOLE LENGTH
PLOTTED POSITION
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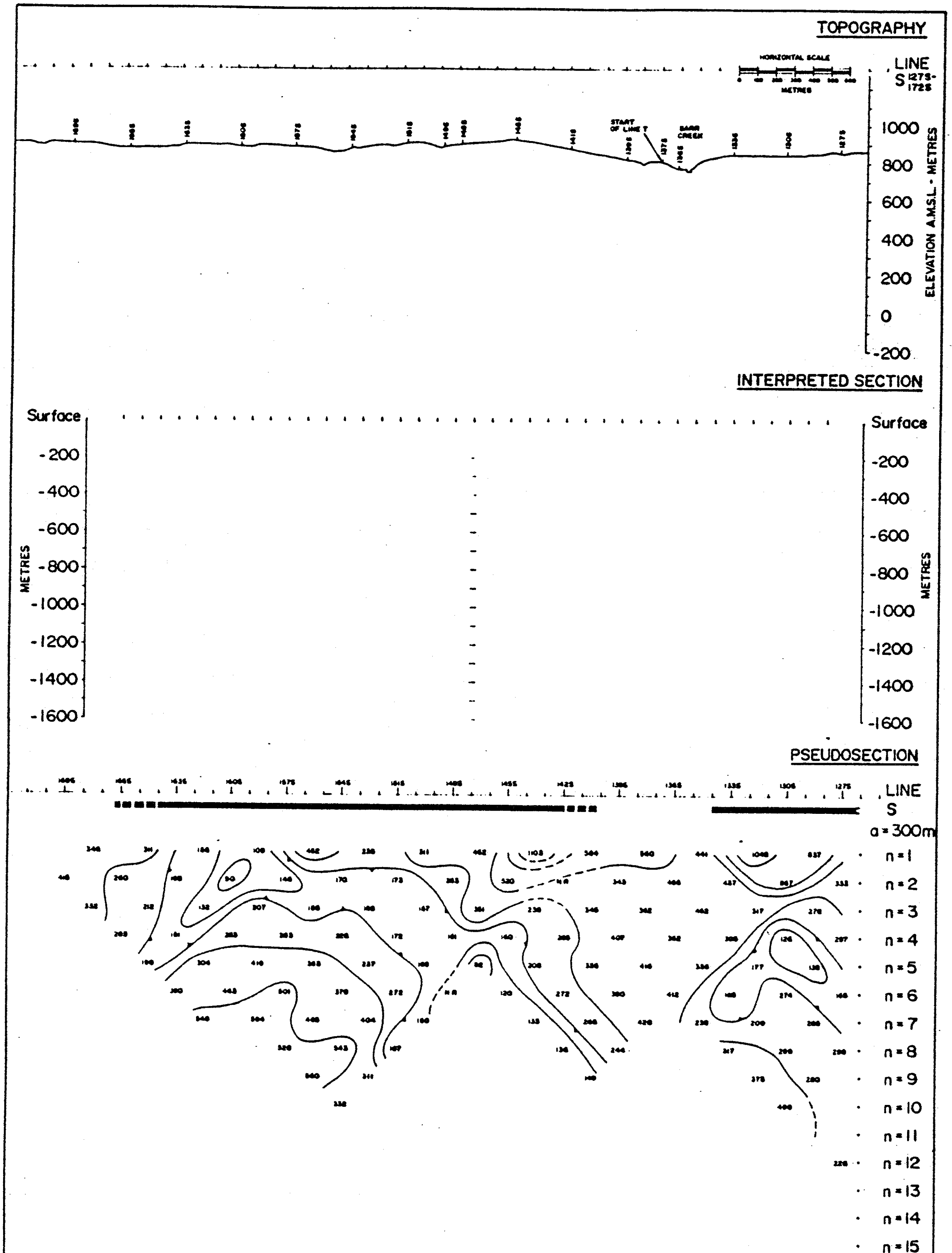
D.C. RESISTIVITY SURVEY
MEAGER CREEK HOT SPRINGS AREA
OCTOBER 1980
SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.
LINE S 985-1335
Figure 9



INTERPRETED SECTION

500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES

RESISTIVITY CONTACT

PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE

LIMIT OF INTERPRETATION

PSEUDOSECTION PLOTTING

DIPOLE - DIPOLE ARRAY

C_1-C_2 CURRENT DIPOLE

P_1-P_2 POTENTIAL DIPOLE

a DIPOLE LENGTH

DEFINITE ANOMALY

POSSIBLE ANOMALY

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D.C. RESISTIVITY SURVEY

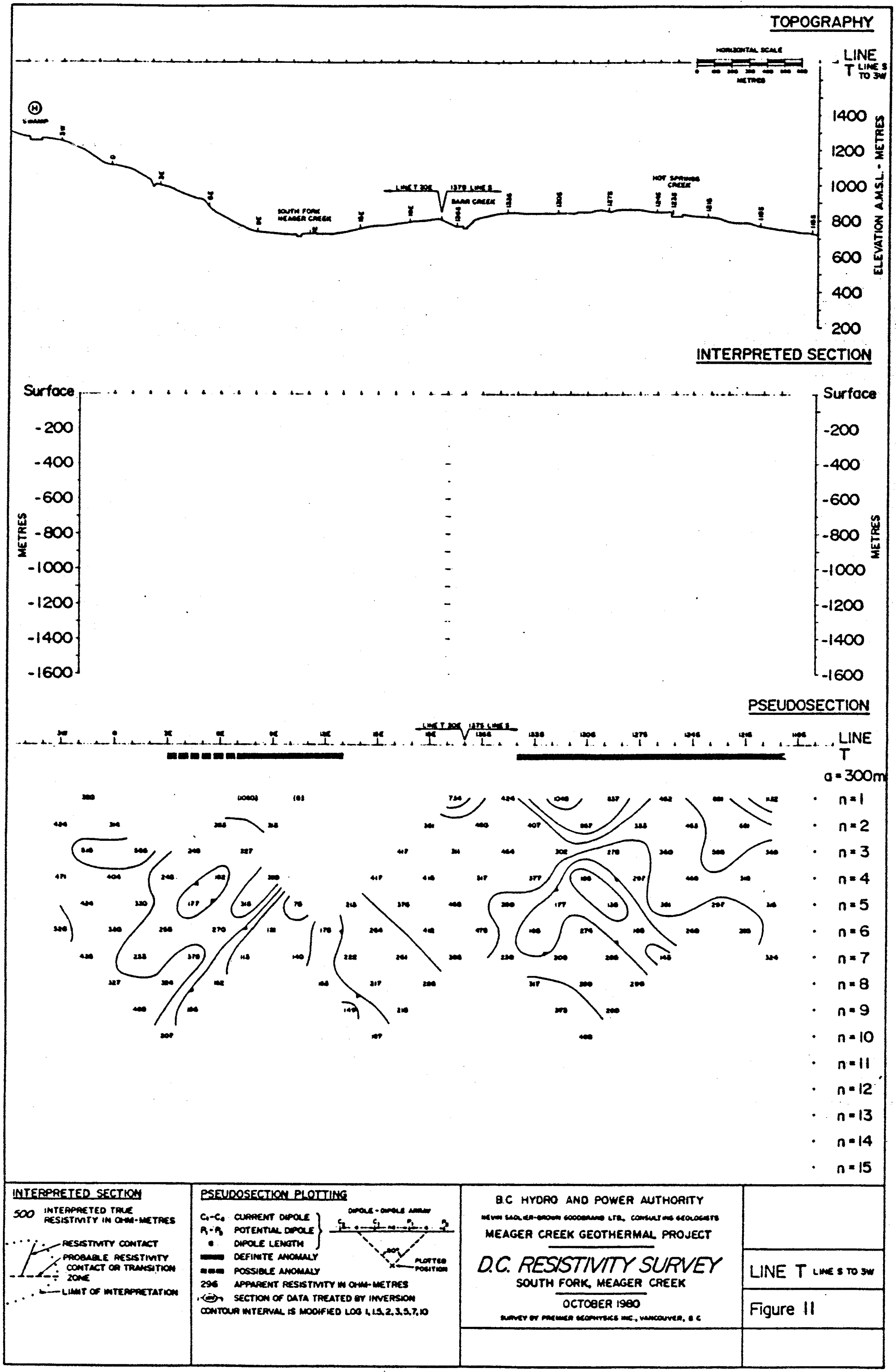
SOUTH FORK, MEAGER CREEK

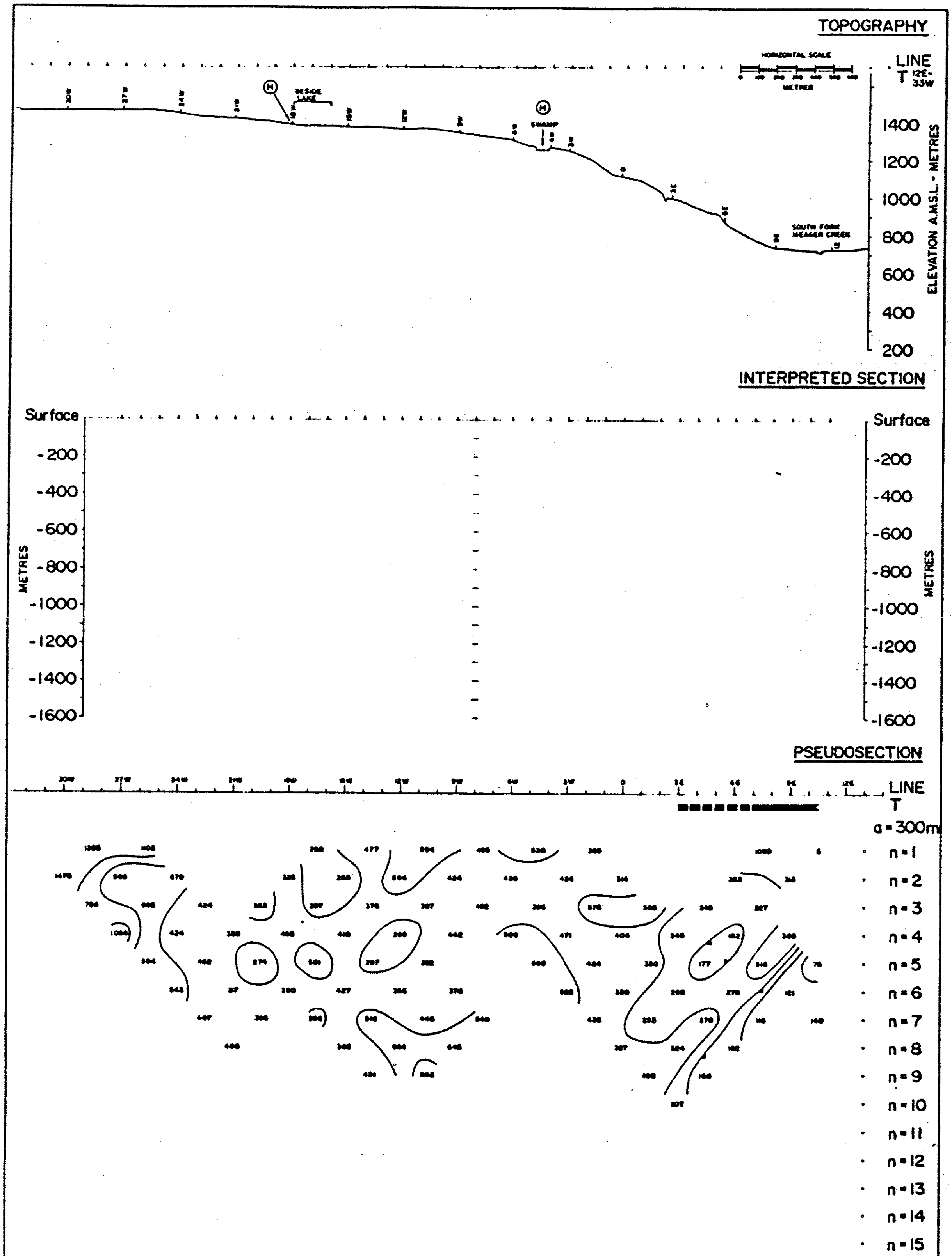
OCTOBER 1980

SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.

LINE S 127S-172S

Figure 10


TOPOGRAPHY
HORIZONTAL SCALE
METRES
LINE T LINE S TO 3W
1400
1200
1000
800
600
400
200
ELEVATION A.M.S.L. - METRES
SOUTH FORK MEAGER CREEK
BARR CREEK
HOT SPRINGS CREEK
INTERPRETED SECTION
Surface
-200
-400
-600
-800
-1000
-1200
-1400
-1600
METRES
PSEUDOSECTION
LINE T
a = 300m
n = 1
n = 2
n = 3
n = 4
n = 5
n = 6
n = 7
n = 8
n = 9
n = 10
n = 11
n = 12
n = 13
n = 14
n = 15
INTERPRETED SECTION
500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES
RESISTIVITY CONTACT
PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE
LIMIT OF INTERPRETATION
PSEUDOSECTION PLOTTING
C1-C2 CURRENT DIPOLE
P1-P2 POTENTIAL DIPOLE
a DIPOLE LENGTH
DIPOLE - DIPOLE ARRAY
PLOTTED POSITION
DEFINITE ANOMALY
POSSIBLE ANOMALY
296 APPARENT RESISTIVITY IN OHM-METRES
SECTION OF DATA TREATED BY INVERSION
CONTOUR INTERVAL IS MODIFIED LOG 1, 1.5, 2, 3, 5, 7, 10
B.C. HYDRO AND POWER AUTHORITY
NEVIN SADLIER-BROWN GOODBRAND LTD., CONSULTING GEOLOGISTS
MEAGER CREEK GEOTHERMAL PROJECT
D.C. RESISTIVITY SURVEY
SOUTH FORK, MEAGER CREEK
OCTOBER 1980
SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.
LINE T LINE S TO 3W
Figure 11



INTERPRETED SECTION

500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES

RESISTIVITY CONTACT

PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE

LIMIT OF INTERPRETATION

PSEUDOSECTION PLOTTING

C_1-C_2 CURRENT DIPOLE

P_1-P_2 POTENTIAL DIPOLE

a DIPOLE LENGTH

DIPOLE - DIPOLE ARRAY

PLOTTED POSITION

DEFINITE ANOMALY

POSSIBLE ANOMALY

296 APPARENT RESISTIVITY IN OHM-METRES

SECTION OF DATA TREATED BY INVERSION

CONTOUR INTERVAL IS MODIFIED LOG 1, 1.5, 2, 3, 5, 7, 10

B.C HYDRO AND POWER AUTHORITY

NEVIN SADLIER-BROWN GOODBRAND LTD., CONSULTING GEOLOGISTS

MEAGER CREEK GEOTHERMAL PROJECT

D.C. RESISTIVITY SURVEY

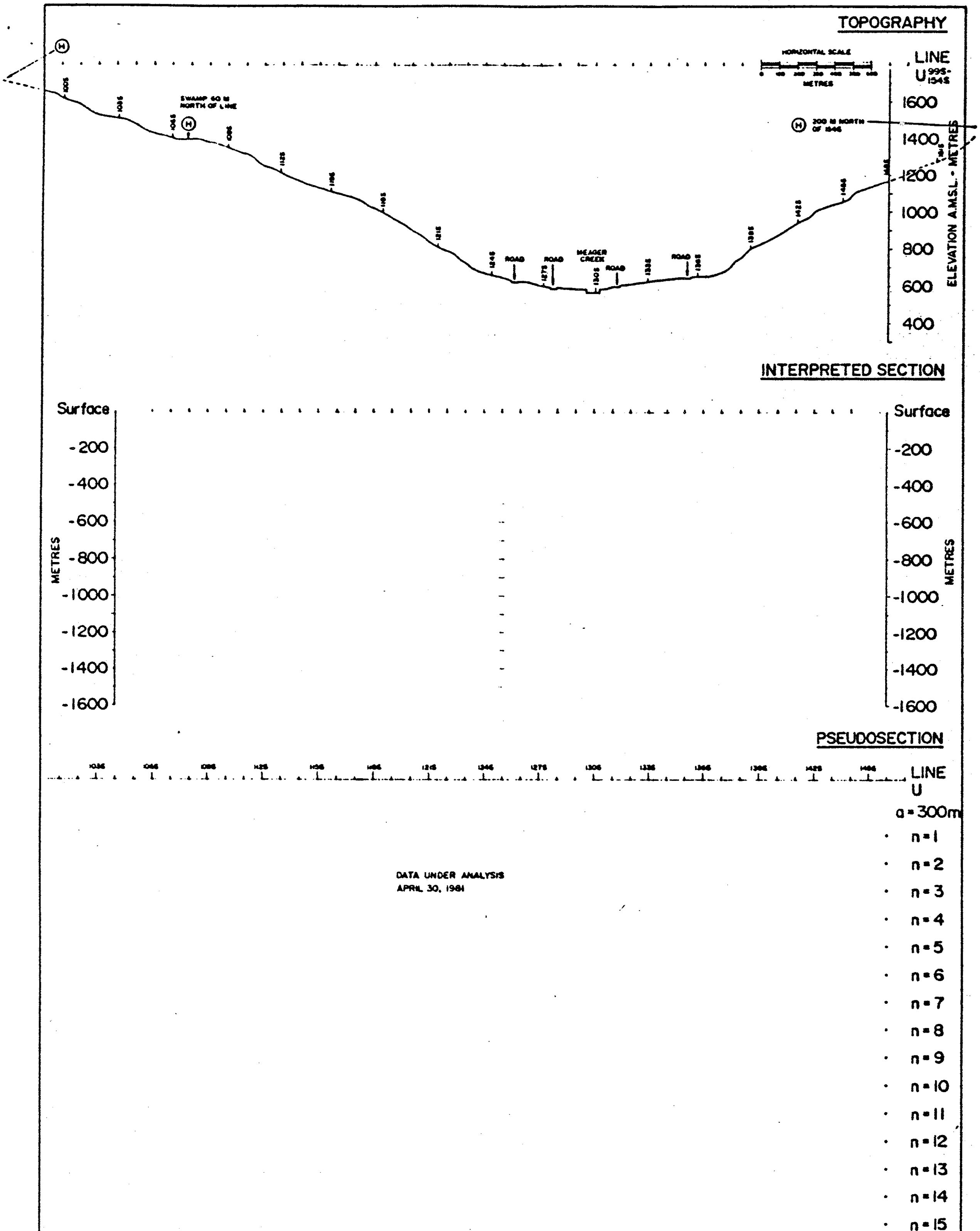
SOUTH FORK, MEAGER CREEK

OCTOBER 1980

SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.

LINE T 12E-33W

Figure 12



INTERPRETED SECTION

500 INTERPRETED TRUE RESISTIVITY IN OHM-METRES

RESISTIVITY CONTACT

PROBABLE RESISTIVITY CONTACT OR TRANSITION ZONE

LIMIT OF INTERPRETATION

PSEUDOSECTION PLOTTING

C_1-C_2 CURRENT DIPOLE

P_1-P_2 POTENTIAL DIPOLE

a DIPOLE LENGTH

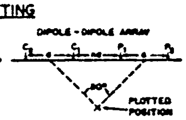
DEFINITE ANOMALY

POSSIBLE ANOMALY

296 APPARENT RESISTIVITY IN OHM-METRES

SECTION OF DATA TREATED BY INVERSION

CONTOUR INTERVAL IS MODIFIED LOG 1, 1.5, 2, 3, 5, 7, 10



B C HYDRO AND POWER AUTHORITY

NEVIN SADLIER-BROWN GOODBRAND LTD., CONSULTING GEOLOGISTS

MEAGER CREEK GEOTHERMAL PROJECT

D.C. RESISTIVITY SURVEY

MEAGER CREEK HOT SPRINGS AREA

OCTOBER 1980

SURVEY BY PREMIER GEOPHYSICS INC., VANCOUVER, B.C.

LINE U 99S-154S

Figure 13

APPENDIX A: Dipole-Dipole Array Calculations

Dipole-dipole array surveys are used at Meager Creek when terrain and penetration requirements permit. Dipole-dipole is a standard reconnaissance array, with good vertical resolution, good definition of lateral resistivity changes, and proven operating logistics.

The formula for calculation of apparent resistivity is:

$$R(A) + \pi a(n)(n+1)(n+2)Vp/Ig$$

where R(A) = apparent resistivity in ohm metres

a = length in metres of each survey dipole

n = integer multiple of distance "a", defining separation distance between the two survey dipoles

Vp = measured primary voltage across potential dipole, in volts

Ig = current in amperes passed through current dipole

APPENDIX B: REFERENCES

Fairbank, B.D., Reader, J.F., Sadlier-Brown, T.L., 1980, Report on 1979 drilling and exploration program, Meager Creek Geothermal Area, upper Lillooet River, British Columbia: (unpublished) to B.C. Hydro and Power Authority.

Premier Geophysics Inc., 1979, Note on mechanical waveform separation for filtering chart records: internal operating memo by G.A. Shore, Premier Geophysics Inc., Vancouver, B.C., 2 pp.

Shore, G.A., 1979, Report on D.C. resistivity survey in the upper Lillooet valley, July 1979: unpublished report to Nevin Sadlier-Brown Goodbrand Ltd., reproduced in Fairbank et al (1980).

Shore, G.A., and Schlax, M.G., in preparation, Co-ordination and review of resistivity survey results from the Meager Creek Geothermal Area, 1974 to present: unpublished report to B.C. Hydro and Power Authority.