SUMMARY REPORT

ON A

SEISMIC REFRACTION SURVEY

ON THE

GEOTHERMAL STUDIES

MEAGER CREEK AREA, B.C.

FOR

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(1981 ?)

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This interpretation of data obtained from the seismic refraction survey carried out on the above-named project has been completed. The object of the survey was to determine the thickness of the overburden, or otherwise, depths to bedrock for the purpose of aiding in the optimum location of diamond drill holes in testing out geothermal hot areas. The geophysical information presented herein is based on our best interpretation of field data which were collected according to generally accepted field procedures.

This report is only preliminary since additional work is planned. A more complete report will be given at a later date.

The procedure was as follows; 24 geophones were planted at 50 meter intervals along the line of investigation. The 'two-way, in line' seismic refraction method was used. The data were generally recorded from 9 shots, one off each end, one at each end, and 5 along the length of the spread. Two 12-channel Exploranium/Nimbus signal enhancement seismic systems, model

1210F, were used for recording. Explosives were used as an energy source.

Profile L-28 W was carried out in the north reservoir near the upper reaches of the Lillooet River. It consists of 2 spreads to give a total horizontal length of about 2350 meters. Profile SL-1 was carried out in the south reservoir on Meager Creek. It consists of one spread for a total horizontal distance of about 900 meters.

All seismic data were analyzed using an intercept-delay time technique. Implementation of this method requires reverse refraction profiles with bedrock refractions emanating from a common point for at least two detectors. This rock overlap is necessary in order to obtain a true refractor velocity and travel time in the overburden independent of bedrock dip and/or surface irregularities. The off-end shot times are used to extrapolate the rock refractions from either end back to their respective shot locations. With this information and related overburden velocities, it is possible to compute the depth to rock not only below shot points, but also below each detector. However, the computed depths below shot points should be considered slightly more accurate than those below detectors.

The results are drawn in profile form on the accompanying 2 fold-out sheets at a scale of 1:5,000. A plan of the survey lines is not drawn at this time since additional work is anticipated. The plan will be included in a more complete report at a later date.

The results and comments are as follows.

The seismic refraction work has revealed a 3-layer case along both lines surveyed.

The first layer varies in velocity from 480 to 720 m/s and varies in thickness from 3 to 26 meters on SL-1 and 4 to 57 meters on L-28 W. This velocity layer is likely reflecting a surficial overburden varying in compactness from loose to semi-compact.

The drill hole at the south end of profile L-28 W has shown this material to be a fairly porous, sandy soil that is probably derived from volcanic flows. On SL-1, from observations in the area, the material is probably relatively porous and dry glacial till.

On L-28 W, the second layer has a velocity ranging from 1700 to 2000 m/s which is usually the velocity of compact, water-saturated glacial tills, sands and gravels. However, the drill hole has indicated this layer to be dacite flows as well as some glacial till. If this is the case, then it would follow that the dacite flows would continue along the whole length of the profile. It is quite possible, however, that this layer is simply the water table. In support of this is its agreement with the level of the Lillooet River as well as the small but noticeable discrepency of the seismic layer 1/layer 2 interface with the drill hole overburden/dacite flow interface.

The third layer has a velocity range of 4200 to 5600 m/s and is therefore undoubtedly bedrock. The writer feels that the 4840 to 5600 m/s range is probably reflective of the Coast Intrusions. The drill hole has shown this to be quartz monzonite on L-28 W. The other intrusive rock-type common in this area according to the government geology maps is quartz diorite.

The 4200 m/s velocity zone within the center of L-28 W could either be volcanics of the Gambier Group or possibly a more

fractured phase of the Coast Intrusions.

Within the center of SL-1 in the south reservoir is a zone within the bedrock that has a fairly low velocity of 2680 m/s. This zone could be a fault zone, or an in-filled channel, though for overburden, the velocity is quite high. Of course it could be both since a stream channel will wear in rock where there is a zone of weakness such as a fault zone.

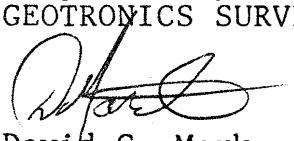
The total depth to competent bedrock on L-28 W varies from 152 m near the Lillooet River to 268 m below geophone 28. That on SL-1 varies from 12 m on the north end of the line to over 200 m on either side of the possible channel.

The suggested velocity classification for these profiles are as follows:

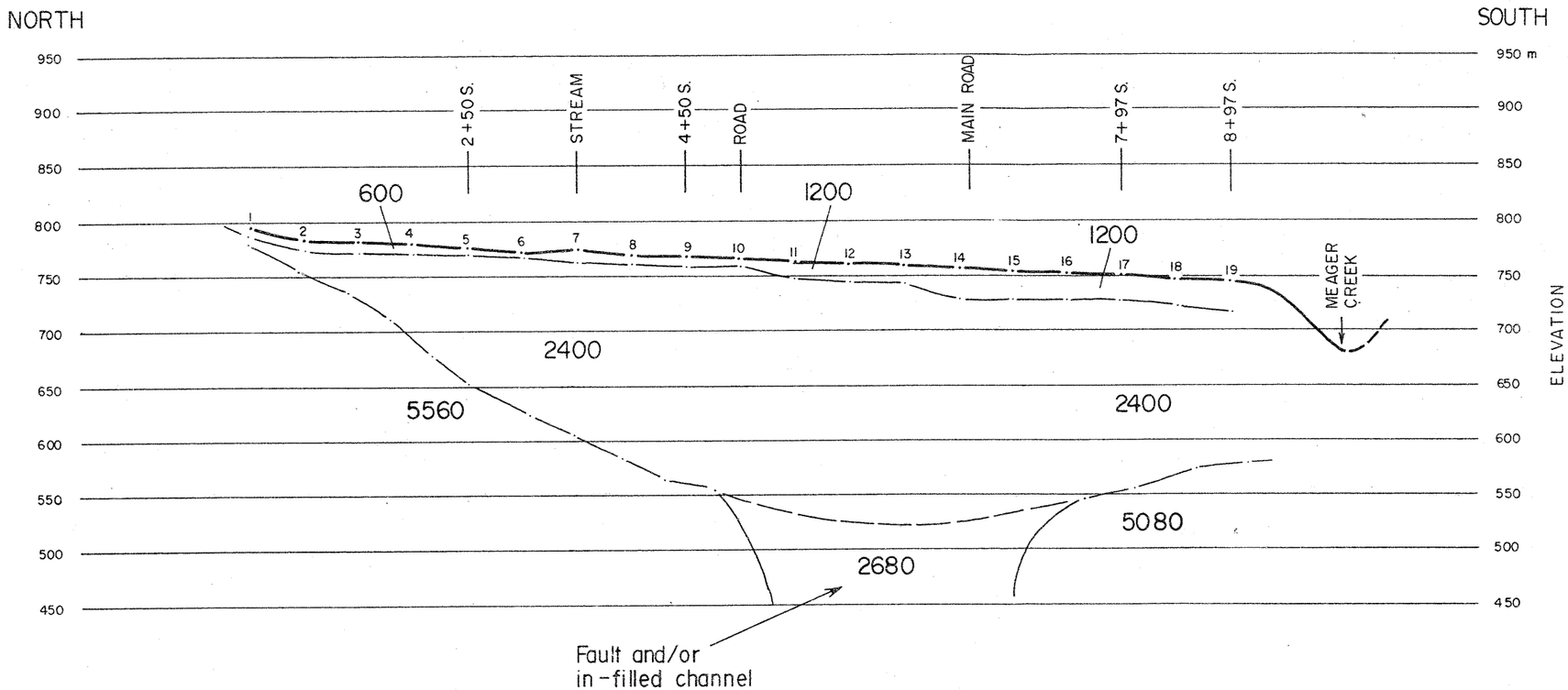
VELOCITY (m/s)	CLASSIFACTION
480 to 720	loose, fairly dry, surficial sands, silts, gravels or tills.
1200	partially saturated, fairly compact sands, silts, clays, gravels or tills.
1700 to 2400 (2680?)	water-saturated, compact to very compact sands, silts, clays, gravels or tills; dacite flows.
4200	bedrock, probably volcanic
4840 to 5600	bedrock, probably acidic intrusives.

January 27, 1981

Respectfully submitted,
GEOTRONICS SURVEYS LTD.



David G. Mark,
Geophysicist



LEGEND

14 — Geophone location

Computed depth on inferred layer boundary

2100 — Average velocity in metres per second

Drill hole showing bedrock

VELOCITY (m/s)	CLASSIFICATION
480 to 720	- Loose, fairly dry, surficial sands, silts, gravels or tills.
1200	- Partially saturated, fairly compact sands, silts, clays, gravels or tills.
1700 to 2400 (2680?)	- Water - saturated, compact to very compact sands, silts, clays, gravels or tills; dacite flows
4200	- Bedrock, probably volcanic
4840 to 5600	- Bedrock, probably acidic intrusives.

SCALE IN METRES

50 0 50 100 150

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B.C. HYDRO & POWER AUTHORITY
GEOTHERMAL STUDIES
MEAGER CREEK AREA, B.C.

SEISMIC REFRACTION STUDY
PROFILE SL-1
SOUTH RESERVOIR

SCALE :	DATE :	JOB No.	FIGURE No.
1 : 5000	JAN. 1981	80-49	4