MAP NO.: 105 D 16

PLACER X
ASSESSMENT REPORT
PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 120000
MINING DISTRICT: Whitehorse
TYPE OF WORK: Seismic refraction survey

REPORT FILED UNDER: Orion Gold and Mines Ltd.

DATE PERFORMED: Sept. 8 - 11, 1983

DATE FILED: Nov. 30, 1983

LOCATION: **LAT.:** 60° 55'N

LONG.: 134° 10'W

AREA: Sheldon Creek

VALUE $: 5216.52

CLAIM NAME & NO.: PL 6727

WORK DONE BY: R.A. Hillman

WORK DONE FOR: Orion Gold and Mines Ltd.

DATE TO GOOD STANDING:	

REMARKS: SHELDON CREEK

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!REC-ID
*C010*INAM
*C510*C511*++1
*C512*TJB
*C050*C051*REPT*C052*M
*C060*ASSMT
*C550*C551*N*C552*YUKON
*C800*1
*C840*1
*A230*E*A100*A101*1*A102*DINAMAR
*A090*A091*2*A092*ORION GOLD AND MINES LTD,
 SHELDON CREEK AREA, YUKON
*C580*ORION GOLD AND MINES LTD
*C680*SHELDON CREEK
*A390*120000
*A210*A211*1983
*A430*4
*C640*WHITEHORSE
*C650*WHITEHORSE
*C560*C561*N60 55*C562*W134 10
*A290*A291*18
*A450*0
*C540*105D/16
*C040*PL 6727
*A120*A121*1*A122*HILLMAN, R A
*C210*R A HILLMAN
*C700*C703*SEISMIC SURVEYS
*C700*C703*PLACER DEPOSITS
*C700*C703*GOLD
*C810*GEOPHY*C810*SFGMPH*C660*C661*Y*C662*2*C663*3
*C600*C601*GEOPHYSICAL
*C602*SEISMIC VELOCITY PROFILE
*C603*1:480
*C590*LOCATION MAP
*C590*SITE LOCATION
*C590*SURVEY LOCATION MAP
*C590*AIRPHOTO
*C770*QUAT*C750*C753*LEWES RIVER GP
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ORION GOLD & MINES LTD
SHELDON CREEK
1983

Placer Gold
105 D 16
60 55'N, 134 10'W
Whitehorse M.D.

Reference:

Claims: Placer Lease PL6727

Source: Summary by T. Bremner of assessment report 120000 by R.A. Hillman & Associates.

Description:

Sheldon Creek flows eastward into the Teslin River, 30 miles ENE of Whitehorse. The property is located at the headwaters of Sheldon Creek at an elevation of 3400 to 4900 feet above sea level. Bedrock is exposed in the stream banks at the east end of the property, but the western upstream segment is covered with sand, coarse gravel, cobbles and boulders.

Current Work and Results:

A seismic refraction survey was carried out to define the thickness of gravels overlying bedrock. Three short lines totalling 3500 feet were shot along the stream bed using dynamite and a 12-geophone spread. Profiles were drawn showing four layers, each defined by a distinct velocity range:

Velocity (ft/s)	Inferred Material
750	Very loose unsaturated surficial sand & gravel
1000-2500	Loose unsaturated sand, gravel, cobbles
3500-5000	Medium dense saturated sand, gravel, cobbles, boulders
14000-21000	Bedrock (Triassic Lewes River Group clastics & limestone).

Because of the strong velocity contrast between bedrock and the overlying sediments this method is believed to be very useful for profiling the bedrock surface and indicating the thickness of overburden.

ORION GOLD MINES
SHELDON CREEK
1983

105 P 16
60°55'N 134°10'W

CLAIMS: PL 6727

Sheldon Creek flows into the Teslin River and ~~drains~~ dynamite drains Mt. Byng on the Whitehorse Map Sheet. A seismic survey was carried out by R.A. Hoffman + Assoc. on lines run parallel to the creek at three separate localities. Three subsurface zones have tentatively been identified as loose sand and gravel overlying a 4 to 12 m thick zone of dense saturated gravel which overlies a 12 m zone of very dense boulder gravel. Test pitting was done on the creek but there are no results reported.

GEOPHYSICAL CONSULTANTS

R.A. HILLMAN & ASSOCIATES

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ORION GOLD AND MINES LTD.

REPORT ON
SEISMIC REFRACTION INVESTIGATION
FOR
PLACER GOLD EXPLORATION
SHELDON CREEK, YUKON TERRITORY

by

RUSSELL A. HILLMAN, P.ENG.

PROJECT 83-06

SEPTEMBER, 1983

GEOPHYSICAL CONSULTANTS

CONTENTS

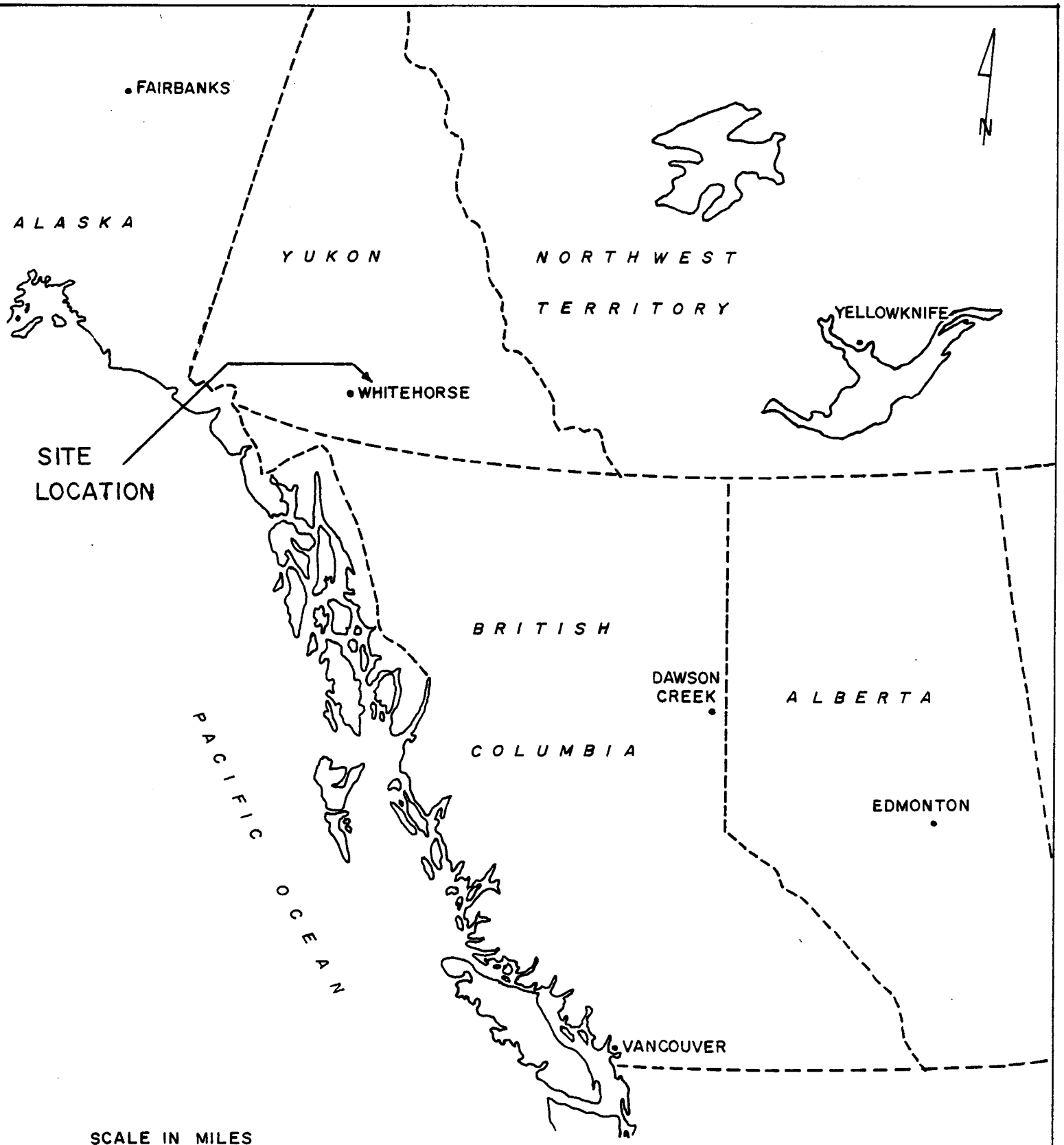
LIST OF FIGURES

1. INTRODUCTION

In the period September 8 to September 11, 1983, R.A. Hillman & Associates carried out a reconnaissance seismic refraction survey for Orion Gold and Mines Ltd. on Sheldon Creek in the Yukon Territory. The property is located at the headwaters of Sheldon Creek and consists of placer lease PL6727, five miles in length. The placer lease is oriented east-west and is located 30 miles E.N.E. of Whitehorse within an area defined by N60°55' to N60°58' latitude, and E134°10' to E134°20' longitude. Figure 1 shows the general location of the site. More detail is provided in Figure 2 which is a segment of 1:250,000 NTS map sheet No. 105D, Whitehorse. National Topographic Series coverage of the site at 1:50,000 scale was not available for inclusion in this report.

A total of 3500 feet of seismic refraction survey work was carried out at the site along three unsurveyed lines. The location of the seismic lines together with the extent of the placer lease is shown in Figure 3, Survey Location Map. This map was produced from Federal Government Air Photo coverage of the area, roll No. A10567, frame Nos. 94 through 98. The seismic lines were situated at three widely spaced intervals and were kept in close proximity to the creek in order to obtain representative data along the creek bed.

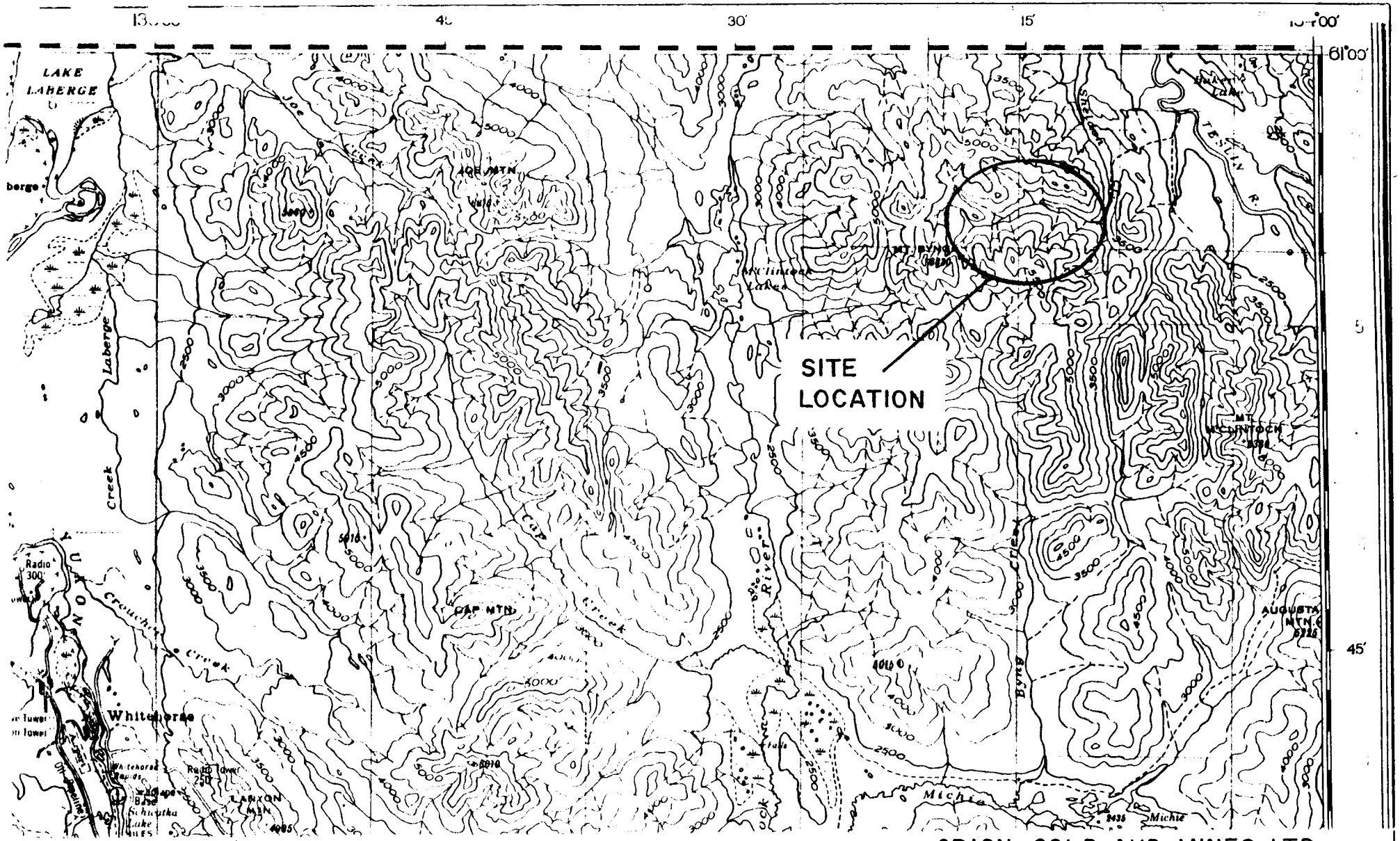
The purpose of the seismic refraction survey was to define the thickness of gravels overlying competent bedrock. It is considered by Orion Gold and Mines Ltd. that based on initial test-pitting results, the gravels may contain concentrations of economical alluvial gold.



ORION GOLD AND MINES LTD.
WHITEHORSE MINING DIVISION

LOCATION PLAN

SEPTEMBER, 1983 83-06
R.A. HILLMAN & ASSOCIATES FIG. 1



ORION GOLD AND MINES LTD
WHITEHORSE MINING DIVISION

SCALE IN MILES

0 4 8 12

SITE LOCATION PLAN

SEPTEMBER, 1983 83-06

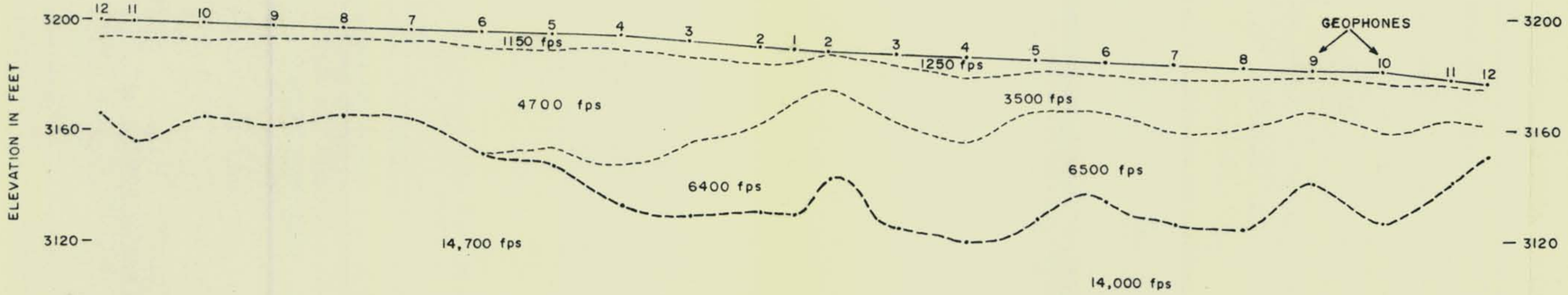
R.A. HILLMAN & ASSOCIATES FIG. 2

W

E

SPREAD 2

SPREAD 1



ELEVATION IN FEET

NOTE: ELEVATIONS APPROXIMATE

LEGEND

------ VELOCITY INTERFACE WITHIN OVERBURDEN

– – – – SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF COMPETENT BEDROCK SURFACE

SCALE IN FEET

0 40 80 120

ORION GOLD AND MINES LTD
WHITEHORSE MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 1

SEPTEMBER, 1983 83-06
R. A. HILLMAN & ASSOCIATES FIG.4

No Map # Doc#120000 (313)

2. SITE DESCRIPTION

The property is located in mountainous terrain with elevations ranging from approximately 3,400 to 4,900 feet above sea level. Sheldon Creek plunges rapidly from west to east through a bed composed mainly of coarse materials. The creek narrows toward the east where bedrock exposure constricts the channel. Bedrock outcrops were not observed on the western upstream segment of the property. Access is currently by helicopter from Whitehorse, however, an access road is planned starting at the M'Clintock bridge on the Alaska Highway and heading north to the property. Limited excavation and sampling work has been carried out in very coarse, dense, gravels, cobbles and boulders approximately 1,500 feet downstream of the eastern extremity of the property.

3. THE SEISMIC REFRACTION SURVEY

3.1 EQUIPMENT

The seismic refraction investigation was carried out utilizing a Nimbus Instruments Model ES-1200, 12 channel, Signal Enhancement Seismograph. Receiver cables used were generally 250 feet in length. Geophone spacings were either 12.5 or more generally 25 feet. Explosive charges were detonated electrically using a Nimbus Instruments HVB-1 high voltage, capacitor type blaster.

3.2 SURVEY PROCEDURE

For each spread, the seismic cable was stretched out in a straight line and the geophones implanted. Five different shot holes were then excavated: one at either end of the line, one at the centre of the line, and one off each end of the line to ensure adequate coverage of the basal layer. Forty percent Forcite was utilized as an energy source in the survey. Shots were detonated individually and arrival times for each geophone were automatically recorded in the seismograph. Hard copy records were made on light sensitive recording film. Data recorded during field surveying operations was generally good.

Throughout the survey, notes were recorded regarding surface topography and slope changes as they might affect the interpretation of seismic refraction data. Hand-held levelling or barometer altimeter surveying was not carried out along the seismic lines.

4. ANALYSIS

4.1 INTERPRETATION

Interpretation of the data generally indicates a four layer case which is interpreted as unsaturated and saturated coarse gravels, cobbles and boulders overlying competent bedrock. In some instances, only three distinct layers were encountered.

Where a refractor was relatively shallow, our field procedure enabled a detailed interpretation of the depth to the refractor below each geophone location. This is evident on the profiles by the presence of continuous dashed lines representative of contacts between contrasting overburden materials and a heavy continuous dashed line representative of the interpreted competent bedrock surface.

4.2 INTERPRETIVE METHODS

The final interpretation of the seismic data was arrived at through a combination of manual and computer operations. The delay time or time depth technique was employed in arriving at the final sections. In particular, the ability of the program to determine time-depths and corrected velocity computations greatly facilitated the interpretation of the data.

4.3 LIMITATIONS

The depths to subsurface boundaries derived from seismic refraction surveys are generally accurate to within ten percent of the true depths to the boundaries. In some cases, unusual geological condigions may produce false seismic arrivals with the result that computed depths to subsurface refractors may be less accurate.

In this survey, relative topographic information was recorded in the field by visually estimating differences between points. While greatly assisting the interpretation of the data, this information is inadequate for highly accurate seismic interpretation. Errors introduced from topographic surveying produce errors in the computed thicknesses of underlying layers and consequently in the depths to the competent bedrock surface.

The geophysical information provided in this report is based upon seismic measurements and field procedures and our interpretation of the data. Geological information is based upon our estimate of subsurface conditions considering the seismic data and all other information available to us. The results are interpretive and are considered to be a reasonably accurate presentation of existing subsurface conditions within the limitations of the seismic refraction method.

5. GEOPHYSICAL RESULTS

5.1 GENERAL

The results of the seismic refraction work are shown at a natural scale of 1 inch to 40 feet in Figures 4, 5, and 6, Seismic Velocity Profiles SL-1, 2, and 3 respectively. Figures 4 and 5 are shown with the observer facing north whereas Figure 6 is shown with the observer facing west. The configuration of the subsurface boundaries were arrived at by plotting computed thicknesses below each geophone location and fitting a smooth line through these points.

Seismic Line 1

Seismic Line 1 was located in close proximity to and north of Sheldon Creek approximately 100 feet upstream from the No. 1 claim post. Overburden at this location is believed to be composed of three distinct layers. The thin surficial zone with velocities of 1150 f.p.s. to 1250 f.p.s. is believed to be composed of unsaturated loose, sands, gravel, cobbles and occasional boulders similar to those materials excavated in shallow hand-dug shot holes. Underlying this layer is a thicker zone ranging in apparent thickness from 12 to 41 feet. Represented by velocities of 3500 f.p.s. to 4700 f.p.s., this zone is interpreted as saturated, medium dense, sand, gravel and boulders. Underlying all of spread No. 1 and half of spread No. 2 is a 6400 f.p.s. to 6500 f.p.s. velocity zone that reaches 40 feet in thickness. This zone is interpreted as very dense, saturated, coarse, gravels, cobbles and boulders similar to the materials excavated for gold values downstream. The basal layer having a velocity range of 14,000 f.p.s. to 14,700 f.p.s. is interpreted as the competent bedrock surface.

Seismic Line 2

Seismic Line 2 was located approximately mid-way between the downstream and upstream extremities of the placer lease. At this location, overburden is believed to be composed of three distinct layers. The thin 750 f.p.s. zone underlying spread No. 2 and 3 which were located on a small rise adjacent to the creek, is believed to be composed of very loose sand and gravel. The zone ranging in velocity from 1200 f.p.s. to 2000 f.p.s. is believed to be composed of unsaturated, loose sand, gravel, cobbles and occasional boulders. Thicknesses for this layer vary from 0 to 15 feet. Underlying this layer is a generally thick velocity zone having velocities of 5800 f.p.s. to 6700 f.p.s. Varying in apparent thickness from 0 to 66 feet, this layer is believed to be composed of dense to very dense, saturated, coarse gravels, cobbles and boulders. The basal velocity zone ranging in apparent velocity from 14,000 f.p.s. to 21,000 f.p.s. is interpreted as the competent bedrock surface.

Seismic Line 3

Seismic Line 3 was located approximately 100 feet west of Sheldon Creek with the northernmost extremity of the line opposite the No. 2 claim post. Overburden at this location is believed to be composed of three distinct layers. The thin surficial layer ranging in apparent velocity from 1,000 f.p.s. to 1,100 f.p.s. is probably composed of loose, sand, gravel and occasional cobbles. The thick intermediate zone having velocities of the order of 1900 f.p.s. to 2500 f.p.s. is distinct from seismic lines 1 and 2. Ranging in apparent thickness from 10 to 85 feet, this layer is believed to be composed of loose sand, gravels, cobbles and occasional boulders. The continuous velocity zone underlying this

layer on spread Nos. 1 to 4 and having velocities ranging from 3500 f.p.s. to 5000 f.p.s. is interpreted as saturated, medium dense, sand, gravel, cobbles and occasional boulders. Seismic Line 3 also differs from Seismic Lines 1 and 2 in the absence of the thick 5800 f.p.s. to 6700 f.p.s. zone. The basal velocity zone indicated by velocities of 14,700 f.p.s. to 17,500 f.p.s. is interpreted as the competent bedrock surface.

5.2 SYNTHESIS

The classification and identification of geological materials is difficult due to the overlap of velocities between distinct geological materials. For instance, the thick 5800 f.p.s. to 6700 f.p.s. zone is interpreted as coarse alluvial materials but may be composed in part of weathered bedrock.

In this survey, the most probable relationship between geological materials and computed seismic velocities is as follows:

750 f.p.s.	Very loose, unsaturated, surficial materials mainly sand and gravels.
1000 f.p.s. - 2500 f.p.s.	Loose unsaturated, sand, gravel, cobbles and occasional boulders.
3500 f.p.s. - 5000 f.p.s.	Medium dense, saturated sand, gravel, cobbles and boulders.
5800 f.p.s. - 6700 f.p.s.	Very dense, saturated, coarse gravel, cobbles and boulders.
14,000 f.p.s. - 21,000 f.p.s.	Competent bedrock.

The interpretation of the survey data embodied in this report is a geophysical appraisal. As such, it incorporates only probable geological parameters. With additional geological information provided by trenching, it may be possible to enhance the interpretation as presented.

6. RECOMMENDATIONS

Based on our analysis of the seismic data, there appears to be a very favourable velocity contrast between interpreted overburden materials and the underlying competent bedrock. If field excavation operations confirm the general accuracy of the seismic interpretation presented herein, consideration should be given to additional seismic work on the property. Seismic refraction work could provide further assistance to mining operations by determining the vertical extent and distribution of a particular overburden layer confirmed as a gold bearing unit or alternatively by profiling the bedrock surface where gold values have been found to be anomalously high.

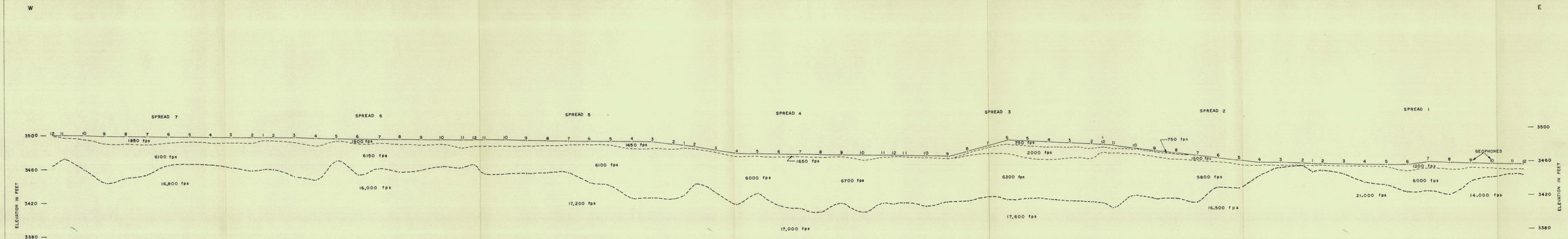
for R. A. HILLMAN & ASSOCIATES

Russell A. Hillman

Russell A. Hillman, P.Eng.
Principal Geophysicist

JESTE LA REINE DU CHEF DU CANADA, MINISTERE DE L'ENERGIE, DES MINES ET DES RESSOURCES.

MAJESTY THE QUEEN IN RIGHT OF CANADA, DEPARTMENT OF ENERGY, MINES AND RESOURCES.



NOTE: ELEVATIONS APPROXIMATE

LEGEND

----- VELOCITY INTERFACE WITHIN OVERBURDEN

— — — SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF COMPETENT BEDROCK SURFACE

SCALE IN FEET

0 40 80 120

ORION GOLD AND MINES LTD
WHITEHORSE MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 2

SEPTEMBER, 1983
R.A. HILLMAN & ASSOCIATES

83-06
FIG. 5

No Map #
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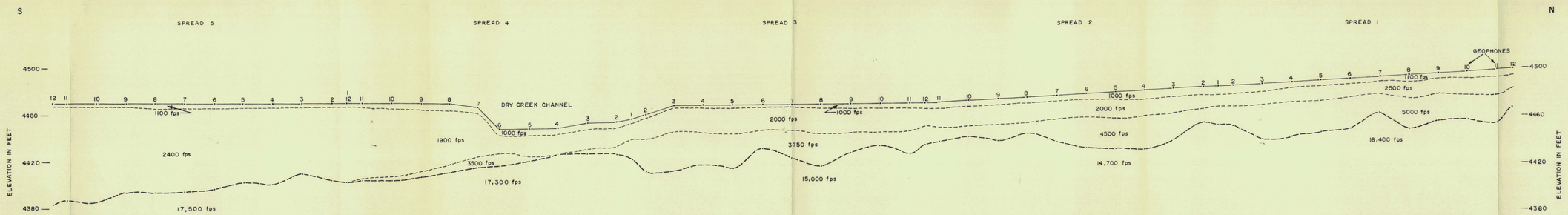

NOTE: ELEVATIONS APPROXIMATE

LEGEND

----- VELOCITY INTERFACE WITHIN OVERBURDEN

----- SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF COMPETENT BEDROCK SURFACE

SCALE IN FEET

0 40 80 120

ORION GOLD AND MINES LTD
WHITEHORSE MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 3

SEPTEMBER, 1983 83-06
R.A. HILLMAN & ASSOCIATES FIG. 6

No Map#
Da#120000

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