A GEOPHYSICAL REPORT ON A VLF-EM SURVEY ON THE SILVER PEAK CLAIMS

New Westminster M.D.
92 H / 6 W
49° 18.5 121° 27

FOR

MR. LYNN BEARD

BY

JOHN LLOYD, M.Sc., P. Eng.

LLOYD GEOPHYSICS LIMITED

VANCOUVER, BRITISH COLUMBIA

FEBRUARY, 1983

SUMMARY

On January 22 and February 3, 1983 Lloyd Geophysics Limited carried out an EM-16 VLF survey for Mr. Lynn Beard on his property at Silver Peak to attempt to detect an extension of the Eureka silver-bearing vein eastward along strike.

The VLF technique was unsuccessful in detecting any extension, however disseminated or poorly connected ores may go undetected by this method.

A weak anomaly may warrant further investigation if favourable geological factors exist but is considered a poor target.

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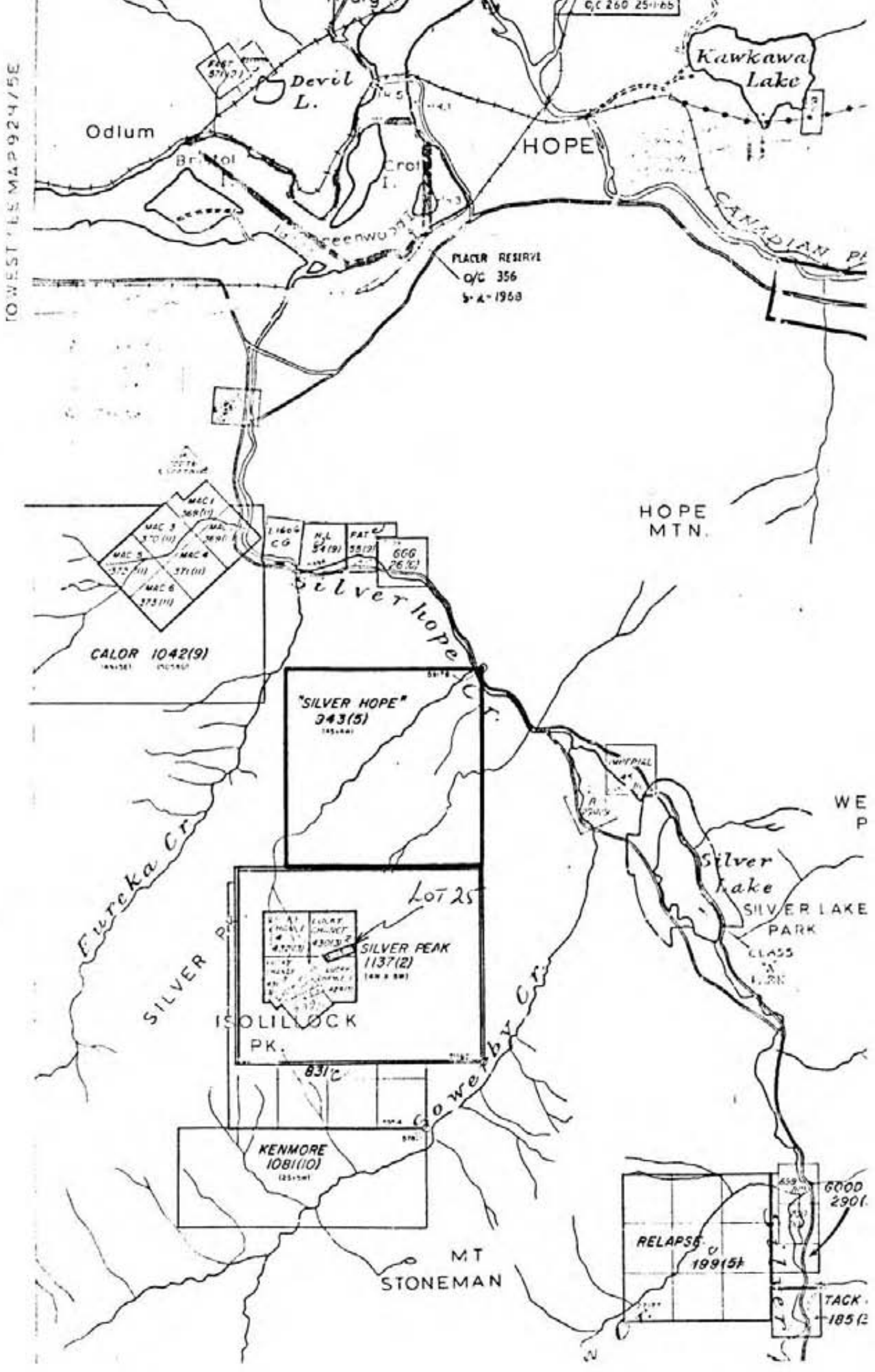

Devil L.
Odlum
Bristol
Kawkawa Lake
HOPE
PLACER RESERVE
O/C 356
HOPE MTN.
Silver Hope Cr.
CALOR 1042(9)
"SILVER HOPE" 343(5)
Eureka Cr.
SILVER PEAK 1137(2)
Lot 25
ISOLILLOOCK PK.
KENMORE 1081(10)
Gowerby Cr.
MT STONEMAN
RELAPSE 1991(5)
Silver Lake
SILVER LAKE PARK
CLASS "A" PARK
HOPE

1. INTRODUCTION

On January 22 and February 3, 1983 Lloyd Geophysics Limited carried out a VLF-EM survey for Mr. Lynn Beard on his property at Silver Peak, located approximately 8 kilometers south of Hope, B.C. The field work was done by Mr. Jeff Warne under the supervision of Mr. John Lloyd, P. Eng.

The property is accessible by helicopter from Aggasiz and, during summer months, by a road connecting with the road leading south from Highway 1 into Silver Lake Provincial Park. The access road leads to the old Eureka mine workings and has been more recently used for logging operations in the area. However, at the time of the survey the road was impassable by 4 wheel drive vehicle, due to mud at lower elevations and deep snow at higher elevations.

The purpose of the survey was to attempt to locate and delineate a possible continuation, along strike, of a silver bearing vein known as the Eureka vein.

2. GEOLOGIC SETTING

The regional geology consists of Lower Cretaceous age meta-conglomerate occurring in steep contacts with quartz diorites associated with the Coast Range intrusions. Fracturing and local intrusions by diorite dykes occurs within the conglomerate which hosts silver-bearing siderite-tetrahedrite.

3. INSTRUMENT SPECIFICATIONS

The equipment used to carry out the survey was the EM-16 VLF receiver manufactured by Geonics Limited of Mississauga, Ontario.

The EM-16 is simply a very sensitive receiver covering the frequency band of the VLF transmitting stations established for communication with submarines. It consists of a signal coil and a reference coil which are mutually perpendicular and tuned to a particular transmitter's frequency by a plug-in crystal. Two crystals can be accommodated in the instrument with selection by external switch. For this survey the receiver was tuned to the transmitter at Lualualei, Hawaii transmitting at 23.4 kHz.

The signal coil is incorporated into the handle of the instrument and the reference coil is a smaller cross piece at the end of the handle. The transmitter azimuth is determined by orienting the signal coil axis horizontal and the reference coil vertical and rotating the coils about a vertical axis to obtain minimum signal. The horizontal primary magnetic field of the transmitter is perpendicular to this direction. Optimum survey direction and orientation of the coils for making measurements are perpendicular to the transmitter azimuth.

Measurements are made by rotating the coils about an axis parallel to the transmitter azimuth to obtain minimum or null signal in the signal coil. The signal is further minimized by adjusting the reference coil control knob on the control panel. The signal coil inputs directly to the signal amplifier while the reference signal is phase shifted 90° and adjusted, then inputed to the signal amplifier. Nulling is by audio tone. External or earphone speakers are provided via earphone plug on the control panel.

An inclinometer dial viewed through an optical lens gives the tangent to the inclination of the polarization ellipse expressed in per cent to ±150%. The reference coil control knob is calibrated to ±40% to measure the ellipticity of the of the polarization ellipse. These values closely approximate the inphase and out of phase components respectively, of the vertical secondary field.

A second scale on the inclinometer dial next to the inphase scale, gives the secant to the angle of inclination expressed in percent. This can be used to correct station separation in sloping terrain.

Power is supplied by 6 disposable "AA" cells.

4. SURVEY SPECIFICATIONS

The survey was carried out on lines 200 feet apart at a bearing of 160°. The transmitting station at Lualualei, Hawaii at azimuth 255 was approximately perpendicular to the survey direction. Measurements were made at 50 foot (15 m) station intervals bearing 165°.

Lines 0+00 W to 6+00 W, surveyed January 22, are tied in to the logging road intersection at 2+00 E on the base line. Lines 14+00 W to 10+00 W, surveyed February 3, are tied into the east most switchback on the road leading to the Eureka workings, located at 150 N on line 14+00 W. This position was estimated from a map compiled by McElhanney Surveying & Engineering Ltd. dated July, 1968. The baseline of this section intersected line 6+00 W at 150 S, 200 feet (60 m) horizontal distance east of line 10+00 W. Lines 14+00 W and 12+00 W end at 100 S due to a steep rock bluff which was impassable due to ice.

5. PRESENTATION OF DATA

The VLF survey data are presented on two maps. Map #1 shows the inphase and out of phase profiles plotted on the grid map showing the location of logging roads and approximate location of claim lots. Map #2 is a contour plan of the inphase data after application of a filter operator (Fraser, 1969) which transforms positive inphase inflections into positive peaks.

6. DISCUSSION OF RESULTS

The VLF-EM response depends mainly on the following factors:

1. The electrical interconnection of subsurface conductive materials.

2. The depth and conductivity contrast of overburden and bedrock.

3. The size and shape of conductive bodies and their orientation relative to survey lines and the primary magnetic field.

An Electromagnetic response consists of two components; a real component (inphase) and a complex (out of phase) component. At a given transmitter frequency, the response varies with conductivity and inductance. However, the primary magnetic field suffers both attenuation and phase shift while penetrating overburden to a conductor (and similarly for the secondary field penetrating back to the surface) thus greatly affecting the final measured response. The shape and orientation of a conducting body largely determines the shape and to some extent the magnitude of the response profile.

The profiled data shows a consistent positive background level due to the slope of the terrain in the grid area. The background in higher or more westerly lines where the slope in the direction of the survey lines is greater. The background drops off towards the south end of line 10+00 W where the terrain slopes to the east approximately perpendicular to the line.

No well defined linear trends are evident on the filtered contour map. Thus, if the Eureka vein extends through this area, the VLF method is unable to detect it. However, a more detailed knowledge of the geology of the grid area would be required to

exclude the possibility of the veins existence from this survey method.

A weak conductive response is indicated at 25 N on line 2+00 W. The shape of the quadrature profile follows the inphase and is similar in magnitude. This response is characteristic of a poor conductor at surface or in non conductive ground.

An anomaly at 0+00 on line 14+00 W may indicate a small conductor at depth, however, this response is very weak.

7. CONCLUSIONS AND RECOMMENDATIONS

The VLF survey was unsuccessful in locating an extension of the Eureka and associated silver-bearing veins within the grid area.

Some limits on its possible form may, however, be concluded. There is not, within the grid area, a discrete, shallow (within 50 m) linear body which is a good electrical conductor with respect to the surrounding country rock.

One weak anomaly was defined and may warrant testing by further geophysical or geological techniques if the silver-bearing ores are indeed poor conductors.

Further geophysical work should be considered on the basis of favourable lithologic and structural features within the property area and therefore should be preceded by geologic mapping and possibly soil geochemistry.

8. COST STATEMENT

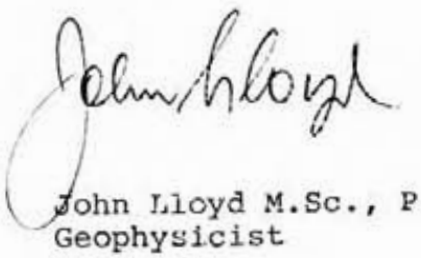
J. Warne - 3 days @ $250.00 per day	$ 750.00
Instrument Rental - 2 days @ $40.00 per day	80.00
Truck Rental and Mileage	249.95
Drafting	90.00
Helicopter	686.16
Helper - S. Spencer - 2 days @ $125.00 per day	250.00
TOTAL	$ 2,106.11

Respectfully submitted,

LLOYD GEOPHYSICS LIMITED

GRJW:JL:lm
February, 1983

G. R. Jeff Warne
Geophysicist



John Lloyd M.Sc., P. Eng.
Geophysicist

9. CERTIFICATION

I, John Lloyd, of 960-625 Howe Street, in the City of Vancouver, in the Province of British Columbia, do hereby certify that:

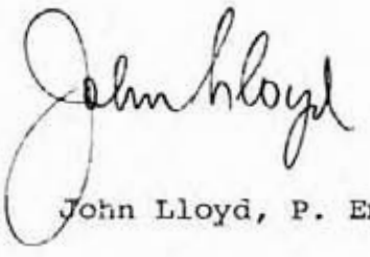
1. I graduated from the University of Liverpool, England in 1960 with a B.Sc. in Physics and Geology, Geophysics Option.

2. I obtained the diploma of the Imperial College of Science and Technology (D.I.C.), in Applied Geophysics from the Royal School of Mines, London University in 1961.

3. I obtained the degree of M.Sc. in Geophysics from the Royal School of Mines, London University in 1962.

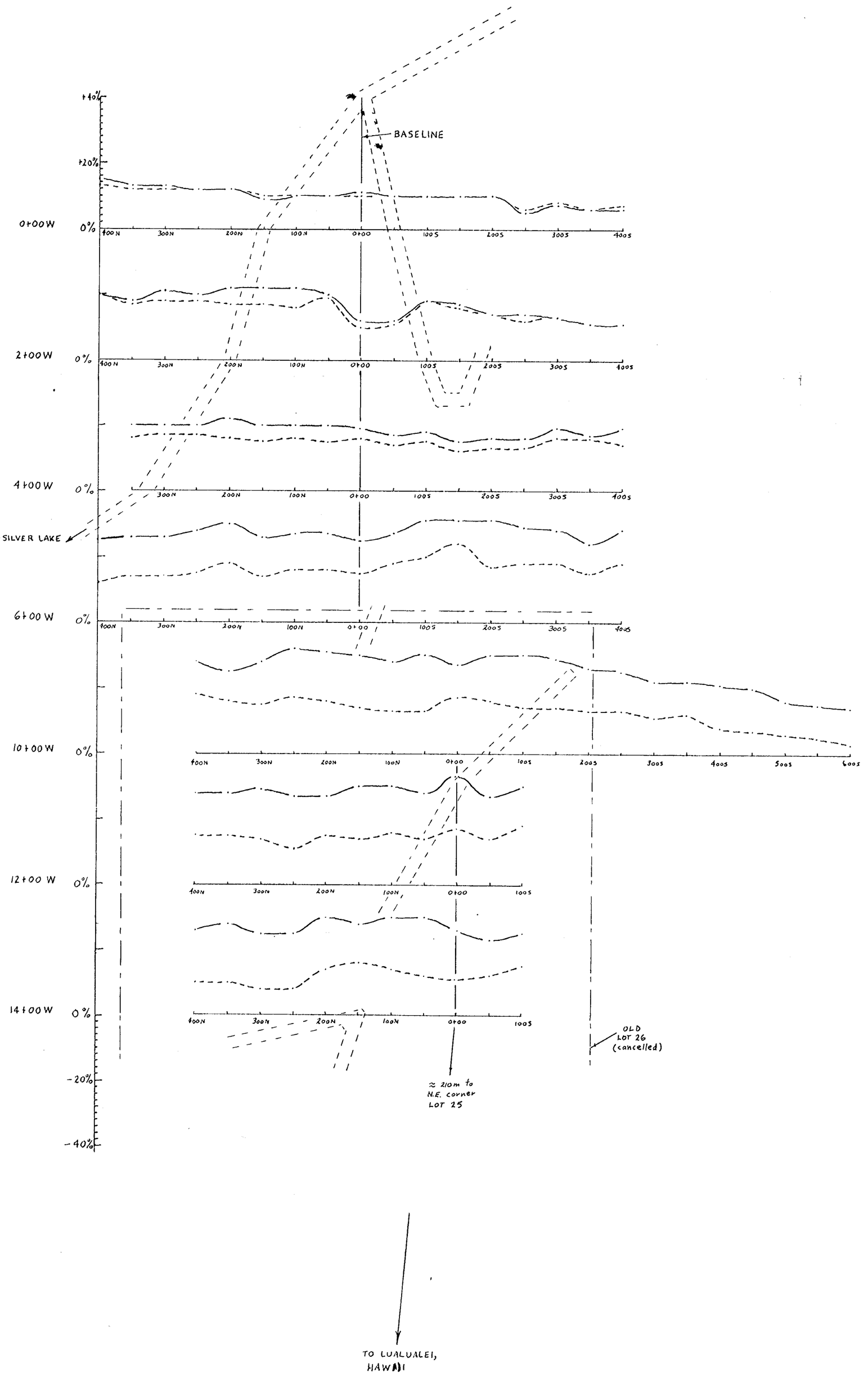
4. I am a member in good standing of the Association of Professional Engineers in the Province of British Columbia, the Society of Exploration Geophysicists of America, the European Association of Exploration Geophysicists and the Canadian Institute of Mining and Metallurgy.

5. I have been practising my profession for the last twenty years.



Vancouver, B.C.
February, 1983

John Lloyd, P. Eng.



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GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,057

John Lloyd

0 12m 24m 60m

LLOYD GEOPHYSICS LTD.

LYNN BEARD

SILVER PEAK CLAIMS

EM-16 VLF PROFILES

IN PHASE (%) ·—·

QUADRATURE (%) ·---·

PROFILE SCALE : 1 in. = 20%

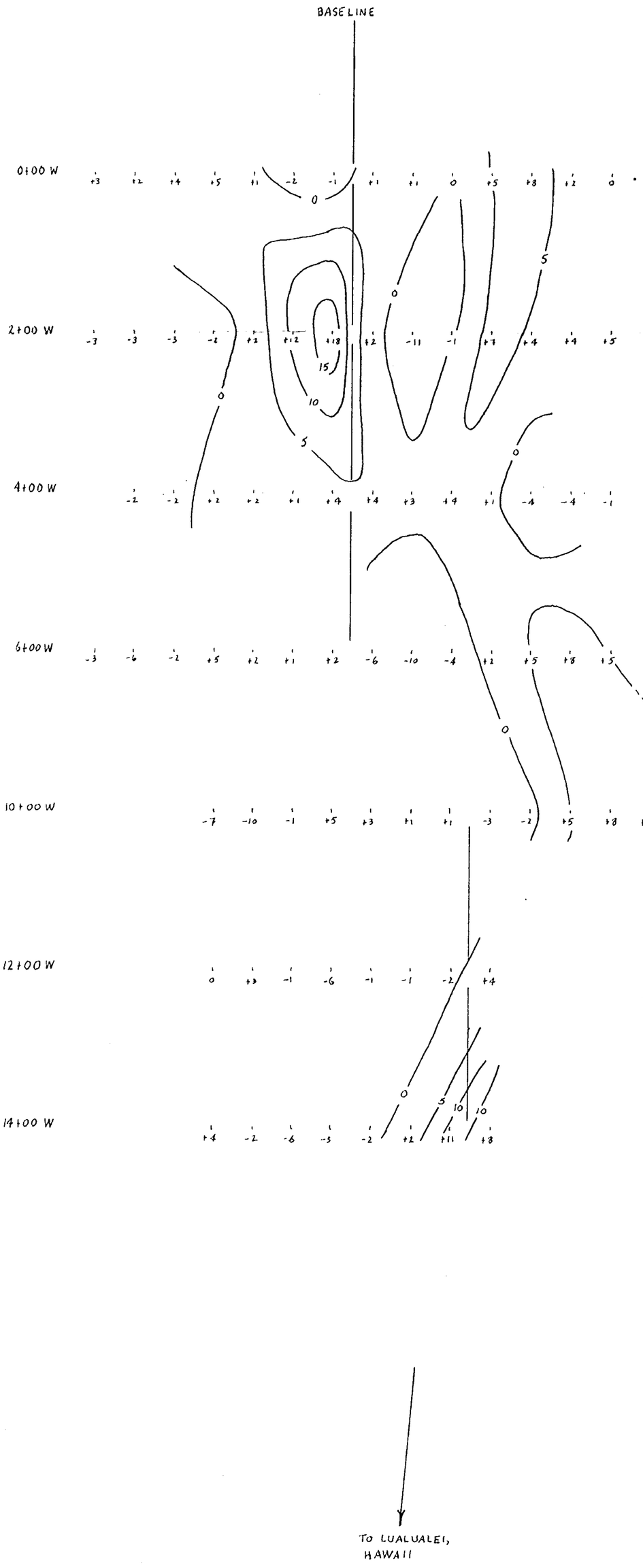
LOGGING ACCESS ROADS (approximate) - - -

LOT BOUNDARY (approximate) — - — - —

TX : LUALUALEI, HAWAII, 23.4 kHz
AZIMUTH 255°
READINGS TAKEN FACING ≈ 165°

SCALE : 1 in. = 100 ft.

MAP # 1



N

0 12m 24m 60m

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SILVER PEAK CLAIMS

EM-16 VLF FILTERED INPHASE CONTOUR MAP

N ← M_5 M_4 M_3 M_2 M_1 → S
PLOTTING POINT

FILTER VALUE = $(M_3 + M_4) - (M_1 + M_2)$
PLOTTED MIDWAY BETWEEN STATION 2 AND STATION 3

CONTOUR INTERVAL : 5 "FILTER" PER CENT

TX : LUALUALEI, HAWAII , 23.4 kHz
AZIMUTH 255°
READINGS TAKEN FACING ≈ 165°

SCALE : 1 in. = 100 ft.

MAP # 2