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A GEOPHYSICAL REPORT ON A

GROUND VLF-EM SURVEY

FOR

MONTEBELLO RESOURCES LIMITED

BY

JOHN LLOYD M. Sc. P. Eng.

LLOYD GEOPHYSICS LIMITED

VANCOUVER, BRITISH COLUMBIA

DECEMBER, 1985

SUMMARY

During the period September 6 to September 16, 1985, Lloyd Geophysics Limited carried out a ground VLF-EM survey on the MG claim, near Wells, British Columbia, for Montebello Resources Limited.

Twelve strong VLF-EM conductors were detected. No drilling has been recommended on these conductors until such time as detailed geological mapping and geochemical soil sampling has been carried out on the property.

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1. INTRODUCTION

During the period September 6 to September 16, 1985, Lloyd Geophysics Limited established a grid and carried out a ground VLF-EM survey on the MG mineral claim held by Montebello Resources Limited, located some 18 kilometres northwest of Wells in the Cariboo Mining Division of central British Columbia.

A compass and chain grid was established on the property consisting of a 2.3 kilometre east-west baseline and 12 north-south cross lines 200 metres apart. The north-south grid lines totalled 20.7 kilometres.

A total of 16.52 kilometres of VLF-EM survey data was collected on the MG claim.

1.1 Location and Access

The MG claim is located about 18 kilometres northwest of the village of Wells in central British Columbia (Figure 1). The claim is situated within National Topographic System area 93 H/4E and is centred at approximately 53° 13' 45" latitude and 121° 46' 30" longitude.

Two roads can be used to reach the claim area. The better of these is the Beaver Pass route which branches northwest of Highway 26, the Quesnel - Barkerville highway, about 25 kilometres west of Wells. This gravelled logging road is fairly well maintained. It is about 40 kilometres from Highway 26 to the claim. An abandoned mining road also reaches lower Sugar Creek, east of the property, via Wells and Hardscrabble

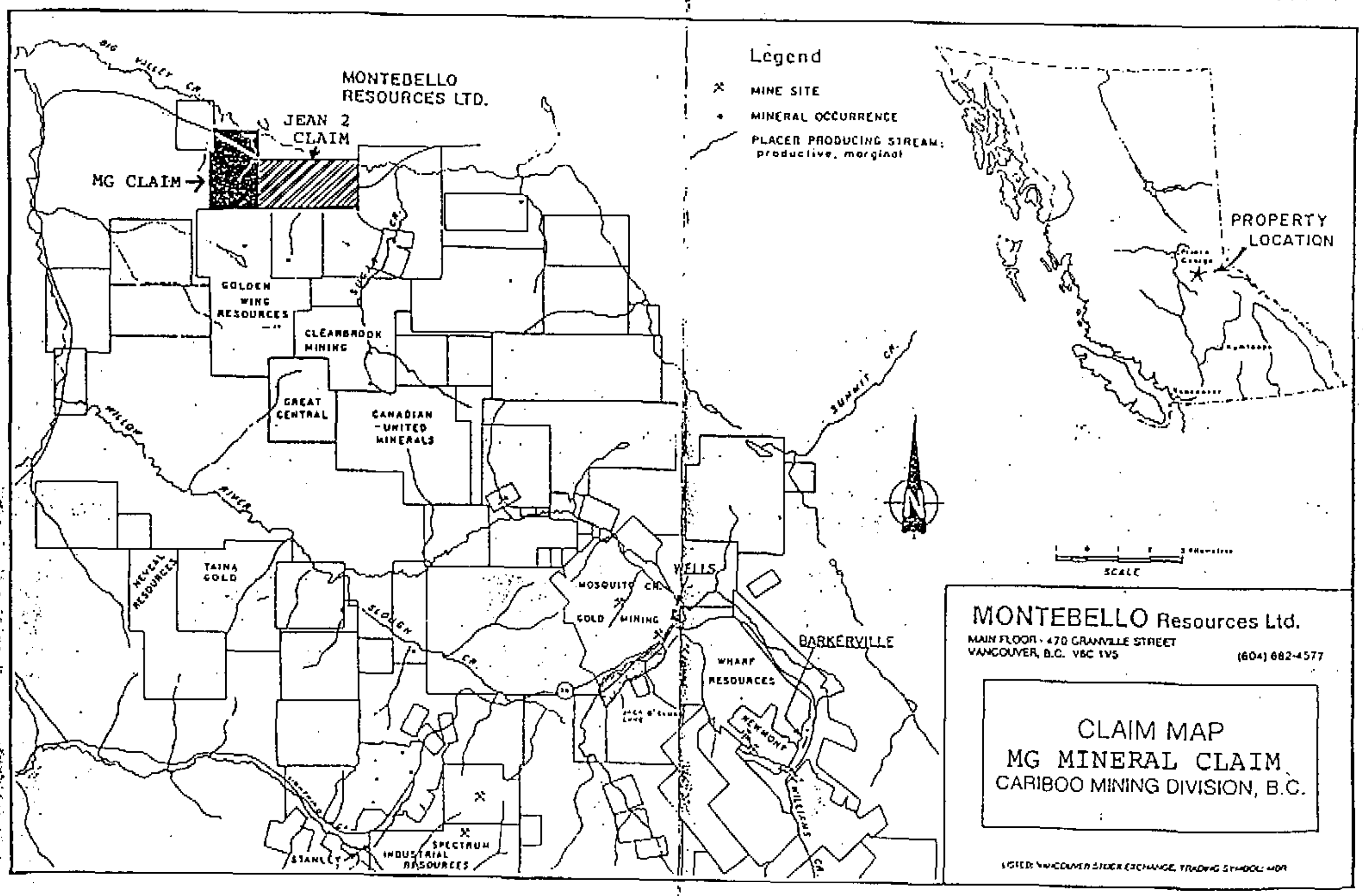

Figure 1 - Map Showing Location of MG Claim

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Creek. This route is about 20 kilometres long but there are several washouts along the way.

1.2 Ownership and Claim Status

The MG claim, Record No. 6446, consisting of 15 units was staked on September 22, 1984 and recorded on September 28, 1984. Montebello Resources Limited is the recorded holder of the claim.

1.3 Geology

From a study of the available publications, the property has a geological setting such that there is a potential for hosting three types of mineral deposits; gold bearing quartz veins, gold bearing pyritic replacement deposits and shale-hosted lead and zinc.

Regional mapping suggests the MG claim is underlain by the Antler Formation, consisting of diorite, basalt, chert, greywacke, serpentinite and gabbro. Generally, these rocks have a low potential for gold mineralization in the district.

Detailed mapping in 1984 on the company's adjoining Jean 2 claim indicated that the claim is underlain by phyllite, quartzite and breccia and conglomerate which correlates with units that have a much higher potential for gold and silver mineralization.

Quartz veins are common and widely distributed throughout the area. In general, the sulphide content is low, but in certain areas they contain a fairly consistent quantity of pyrite with attendent gold. This is of critical importance to the mineral potential of the MG claim.

The principal axis of the Barkerville Gold Belt passing through Island Mountain and Barkerville, is located at or near the contact between Devonian-Mississippian black phyllites and micaceous quartzites containing limestone and dolomite. The gold occurrences consist of auriferous pyrite in quartz veins in the black meta-clastic rocks or stratabound, massive auriferous pyrite lenses, termed 'replacement ore', within and at the contacts of limestone beds in micaceous quartzite. This same structure passes immediately south of the claim and affects the same rock units. This is of critical importance to the mineral potential of the MG claim.

Recently, it has been recognized that the Paleozoic sedimentary units making up most of the area contain stratigraphic equivalents of part of the Selwyn Basin in the northern Cordillera; the Ordovician to Devonian Road River Formation and the Devonian-Mississippian Earn Group, informally called the "black clastics". These units host stratiform lead and zinc deposits in that region. In the Cariboo District, the Black Stuart Formation and Greenberry Limestone Member are time and lithologic correlatives of the black clastic units in the northern Cordillera. The recognition of this correlation gives the claim the potential of having similar deposits.

1.4 Purpose of the VLF-EM Survey

The VLF-EM survey could be expected to detect pyritiferous gold bearing quartz veins, gold bearing pyritic replacement deposits and to a lesser extent, shale hosted lead and zinc deposits.

2. THE VLF-EM SURVEY

2.1 Instrument Specifications

The instrument used to carry out this survey was a VLF-EM 16 receiver manufactured by Geonics Limited of Toronto, Ontario.

The EM 16 is simply a very sensitive receiver covering the frequency band of the VLF transmitting stations established for communication with submarines. These transmissions are used as the primary VLF-EM field. They are generated as a concentric horizontal magnetic field. When these horizontal magnetic fields encounter conductive bodies in the ground, a secondary vertical magnetic field is in turn generated. The total field is not always in the same phase as the primary field on the ground surface. The EM 16 receiver measures the in-phase and the out of phase (quadrature) components of the vertical field.

The instrument 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 Annapolis, Maryland, U.S.A., transmitting at 21.4 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 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 of ±150%. The reference coil control knob is calibrated to ±40% to measure the ellipticity of the polarization ellipse. These values closely approximate the in-phase and out of phase components respectively, of the vertical secondary field.

A second scale on the inclinometer dial next to the in-phase 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.

2.2 Survey Specifications

The in-phase and quadrature components of the vertical field were recorded manually at 20 metre station intervals on lines 200 metres apart.

The raw VLF-EM in-phase component was filtered using the standard Fraser Filter operator:

$$F_{2,3} = (\emptyset_3 + \emptyset_4) - (\emptyset_1 + \emptyset_2)$$

2.3 Presentation of Data

The in-phase data obtained from the survey described in this report has been filtered as described above. The filtered data has been plotted and contoured and is presented at a horizontal scale of 1:5000 on the map folded into the pocket at the end of this report.

3. INTERPRETATION OF DATA

Twelve strong VLF-EM conductors have been interpreted from the filtered data. These conductors range in strike length from 200 to 1200 metres.

3.1 Discussion of Results

The significance of the interpreted conductors is difficult to establish from the geophysical data alone. Detailed geological mapping and geochemical soil sampling have not yet been carried out on the property.

3.2 Conclusions and Recommendations

From a study of the data obtained from the survey described in this report, it has been concluded that there has been insufficient work done on the property to date to enable a full understanding of the significance of the twelve strong VLF-EM conductors detected.

It is recommended that detailed geological mapping and geochemical soil sampling be carried out prior to any thoughts being given to drilling. This is recommended because the very high frequency of the VLF field, compared to standard horizontal loop or pulse EM freqencies, gives rise to large numbers of conductors, which in many cases can be caused by water filled shears (and faults), fracture patterns and even more frequently to geological formations of no economic importance.

Respectfully submitted,

LLOYD GEOPHYSICS LIMITED

John Lloyd, P. Eng.
Geophysicist

Vancouver, B.C.
December, 1985

4. CERTIFICATION

I, John Lloyd, of 1110-625 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.

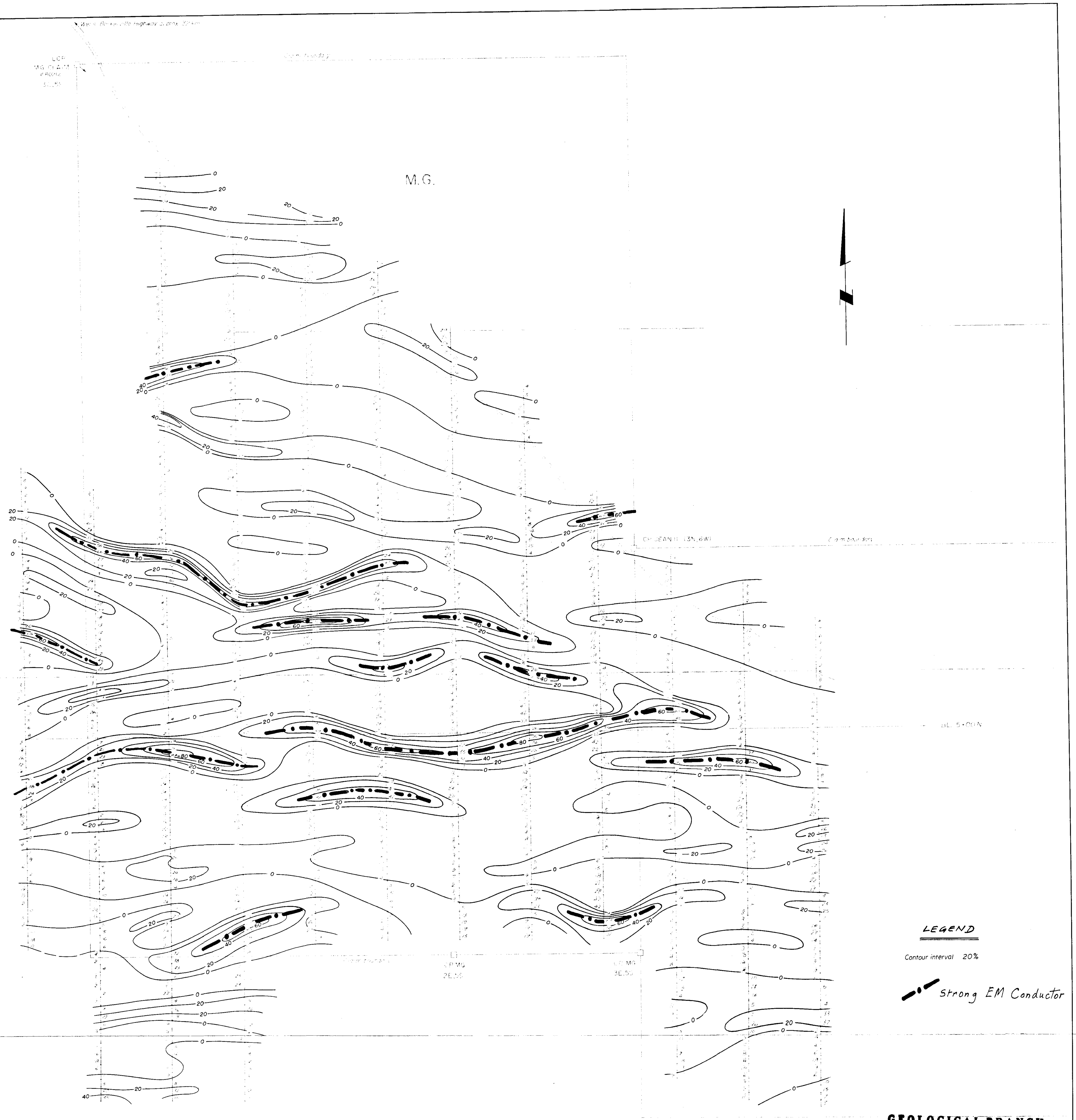
3. I obtained the degree of M.Sc. in Geophysics from the Royal School of Mines, London Univeristy in 1962.

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. I have been practising my profession as a geophysicist for over 20 years.

5. I am a director of Montebello Resources Ltd. and the registered owner of 80,000 shares of that company.

John Lloyd, P. Eng.

Vancouver, B.C.
December, 1985



GEOLOGICAL BRANCH ASSESSMENT REPORT

14,131

Station NSS
Annapolis, MD
21.4 kHz

MONTEBELLO RESOURCES LTD.				
MG. MINERAL CLAIM			CARIBOO M.D., B.C.	
VLF-EM SURVEY FRASER FILTER				
SCALE	N.T.S.	DATE	BY	DWG. No
1:5000	93H/4E	Sept '85	dh dip / JL	1
LLOYD GEOPHYSICS LIMITED				