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REPORT ON A HELICOPTER BORNE TWO FREQUENCY/CONFIGURATION ELECTROMAGNETIC AND MAGNETIC SURVEY IN THE QUESNEL RIVER AREA, BRITISH COLUMBIA.

FOR MR. DAVE STEWART

CLAIMS

JCB 1-4
PASSE 1-4

CARIBOO MINING DIVISION
N.T.S. 93 A/12W13W and 93 B/9E16E
Lat. 52°45' Long. 122°00'

FILMED

SURVEY DATE: MARCH 2 - 4, 1986

Owner/Operator: C.C. Mak

May 15, 1986
Vancouver, B.C.

Apex Airborne Surveys Ltd.
Ronald F. Sheldrake

TABLE OF CONTENTS

LIST OF PLATES

1. SUMMARY

The magnetic data have provided an informative data base for understanding the geological/geophysical nature of the survey area. Further, 1 HEM conductor was identified by the airborne survey that may be due to metallic mineralization. Recommendations for follow-up evaluation have been made.

2. INTRODUCTION

This report discusses the results of a High Sensitivity Helicopter Electromagnetic and Magnetic survey over 2 groups of claims located in the Quesnel Basin called the JCB GROUP and the PASSE GROUP. The survey was undertaken on behalf of Mr. Dave Stewart of Vancouver, B.C. The survey consisted of 31 E-W traverses flown at a flight line interval of 300 meters. A total of 125 kilometers of survey were flown.

The topographical relief of the area is characterized by rolling hills with elevations ranging from 927 meters(3041 feet) to 1200 meters(4000 feet).

The geophysical system that was used on this survey included a Modified Geonics 33-2 Electromagnetometer (HEM), a Total Field Nuclear Precession Magnetometer, 35 mm flight path camera, digital acquisition system, and a radar altimeter.

The Electromagnetic (HEM) equipment consists of two sets of transmitters and receivers operating at different frequencies and coil configurations. See FIGURE 1 -SCHEMATIC OF TWO FREQUENCY/CONFIGURATION H.E.M. SYSTEM.

The HEM and altimeter analogue outputs are digitized by the on-board computer using a sampling rate of 0.1 seconds.

REMARK: The survey flight speed is about 50-100 kilometers/hour which means that a 0.1 second scan interval is equivalent to a measurement about every 2-3 meters on the ground. The magnetometer data are recorded at 1.0 second intervals with a sensitivity of 1 gamma.

APPENDIX I gives the details of the geophysical equipment used for this survey. APPENDIX II describes the flight record and flight path recovery process.

CLAIMS:

CLAIM NAME	RECORD NO.	NO. OF UNITS
JCB GROUP		
JCB 1	5860	20
JCB 2	6006	20
JCB 3	6018	20
JCB 4	6019	8
PASSE GROUP		
PASSE 1	6509	20
PASSE 2	6510	20
PASSE 3	6511	20
PASSE 4	6512	20

The location of the claims on the ground has not been verified by the writer.

LOCATION AND ACCESS:

The claims are situated 40 kilometers southeast of Quesnel, B.C. Access to the claims can be made via the Nyland Lake Road from Quesnel.

GEOLOGY:

The geology of the survey area is not locally well known because of the limited outcrop. However one outcrop of intrusive rocks in the JCB GROUP is mentioned in a Geochemical and Geophysical Report by D.G. Allen and D. R. Macquarrie(1985). The outcrop exhibits some molybdenum mineralization which may be associated to the aplite intrusions. The location of the mineralized outcrop is shown on Plate 1, The Total Field Magnetic Map.

No occurrences of mineralization are reported to exist on the Passe Claim Group.

D.G. Allen(1984) summarized the geology and mineral deposits of the area "A Geological Report on the Tor Claim", for Micrometer Development Corporation and is included herein as Appendix IV.

3. DATA PRESENTATION

MAGNETIC DATA

Contour maps of the total field magnetic values have been provided at a scale of 1:20,000. The magnetic contour maps were compiled from diurnally corrected digital data, gridded using standard numerical techniques, and then contoured. The magnetic data are uncorrected for regional gradient. The contour interval is 10 gammas.

ELECTROMAGNETIC PROFILES MAP

Electromagnetic results are displayed at a scale of 1:20,000 in profile form on Plate 2 and Plate 3 for the JCB GROUP and Plate 2A and Plate 3A for the PASSE GROUP. The vertical scale for the coaxial coil(low frequency) data is 10 ppm/cm and the vertical scale for the coplanar coil(high frequency) data is 20 ppm/cm.

4. DISCUSSION OF RESULTS

GENERAL DISCUSSION- MAGNETIC DATA

Magnetic data can be interpreted to reveal areas underlain by different rock types and lineaments which could indicate fault or fracture zones. Magnetic maps can reveal the location of ore bodies which contain higher percentages of magnetite or pyrrhotite than the surrounding rocks.

GENERAL DISCUSSION- ELECTROMAGNETIC DATA

The geological responses encountered by an electromagnetic survey are of three main types. Bedrock conductors, which include formational graphitic and massive sulphide targets, very often "maximum couple" with the vertical coaxial coil. They can be interpreted for conductance, depth, strike.

Surficial conductors such as overburden, glacial till and lake sedimentation responses, "maximum couple" with the horizontal coplanar coil configuration and are often "broad" responses.

REMARK: Broad surface conductors cannot easily be distinguished from deep seated basement targets. As the depth of a bedrock conductor increases the geophysical response becomes broader.

"Negative" permeability effects occur when rocks are magnetic. The electromagnetic response can become distorted by decreasing the in-phase response, often reversing the sign of the E.M. anomaly. Both coil configurations are affected by this phenomenon. Resistivity, conductance, and depth calculations in this case cannot be made.

Non-geological responses such as lightning interference and

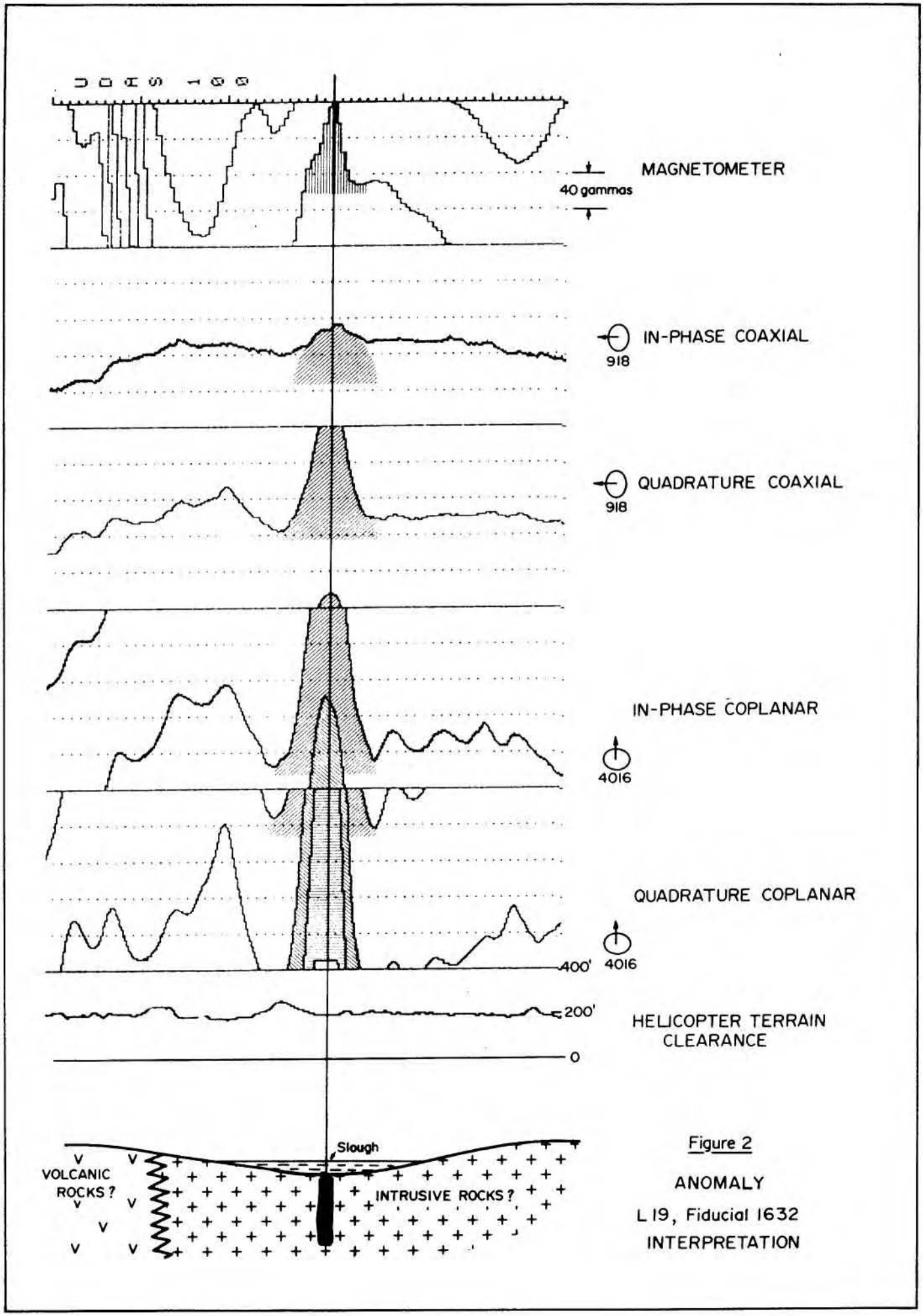

Figure 2

ANOMALY

L 19, Fiducial 1632

INTERPRETATION

"cultural responses" including those due to pipelines, powerlines, buildings, metal culverts, and fence lines etc. are normally indicated by the monitors or otherwise evident from the character of the data trace, or their location.

GEOPHYSICAL DATA - JCB GROUP

No immediately distinguishable features are evident from the magnetic data set, although 3 areas of magnetically higher values were recorded.(higher than 58,250 gammas). The magnetic "highs" may be due to a localized occurrence of a more magnetic intrusive or a more basic volcanic rock. An interpretation of the data is made on Plate 1.

REMARK: The magnetic "high" located on the eastern ends of LN 8 to LN 16 is coincident with a topographic high, suggesting a rock more resistive to erosion, and therefore is possibly more silicic than the rocks to the west.

The regional strike of the geology in this area is about 25 degrees west of north the magnetic features recorded on this survey are subparallel to this.

The HEM data is quite active indicating a relatively high and variable surface conductivity. None of the HEM responses in the JCB CLAIMS are indicative of sulphide mineralization. The HEM responses are caused by variations in the surface(overburden) conductivity and/or variations in terrain clearance.

GEOPHYSICAL DATA - PASSE GROUP

The Magnetic Contour Map (Plate 1A) covering the Passe Group is predominated by a NNE lineament that divides a magnetic unit of rocks to the East from less magnetic rocks in the West. An interpretation of the magnetic data has been made on Plate 1A.

The magnetic "highs" in the center of the mapsheet and

towards the top indicate possible intrusive activity or concentrations of magnetite in a volcanic sequence, and it is around these areas that suitable environments for emplacement of mineralization may occur.

In that regard an HEM response was recorded on LN 19, Fiducial 1632 that is coincident with a sharp magnetic "high". The anomalous response is located on the Passe 1 Claim. Although there is some indication of terrain clearance distortion and possibly current gathering in the HEM response it is interpreted to be a concentration of conductive and magnetic material overlain with a conductive horizon.

A copy of the in-flight record is included as Figure 2 on which a graphical interpretation of the geophysical responses has been made. Because of the overlying conductive layer, and the resulting current gathering effects, an interpretation of data is even more tenuous than usual. However the data indicate a fairly narrow source(possibly 5 meters wide) and may be in the order of 5-10 meters below the water level.

The response could be due to a concentration of sulphides and magnetic material or possibly a concentration of pyrrhotite.

Limited geochemistry sampling(Allen,1985) has been done on the claims but they do not cover the geophysical response mentioned above.

5. CONCLUSIONS AND RECOMMENDATIONS

The geophysical survey was successful in identifying a conductive target that may be related to the presence of metallic mineralization. The target will require ground geophysical verification and testing with several diamond drill holes.

It is recommended that a grid be established on the area of the conductors and ground magnetometer, VLF E.M., Horizontal Loop E.M. and Geochemistry surveys should be undertaken.

Drill hole locations ought to be identifiable from those data.

Respectfully submitted,

Ronald F. Sheldrake

Ronald F. Sheldrake

APEX AIRBORNE SURVEYS LTD.

DATE SIGNED May 30, 1986

BIBLIOGRAPHY AND REFERENCES

ALLEN, D.G. and MACQUARRIE, D.R., "Geochemical and Geophysical Report on the JCB 1 to 4 Claims", May 27, 1986, assessment report.

ALLEN, D.G., "Geochemical Report on the Passe 1 to 4 Claims", November 26, 1986, assessment report.

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BROCK, J.S.,(1984). "Mount Calvery Resources Active in Cariboo Quesnel", Western Miner, April, 1984, pp. 28-29.

SALEKEN, L.W., and SIMPSON R.G., (1984), "Cariboo Quesnel Gold Belt: A Geological Overview", Western Miner, April, 1984, pp. 15-20.

APPENDIX I

INSTRUMENTATION

ELECTROMAGNETOMETER

The electromagnetic instrumentation that was used on this survey utilized both coplanar and coaxial coil configurations, as well as two frequencies.

The system consists of two sets of receivers and transmitters as follows:

(1) COAXIAL PAIR - The coaxial transmitter-receiver pair are separated by 6 meters and utilize a low frequency signal of 933 Hz. This configuration couples best with vertical dike-like targets.

(2) COPLANAR PAIR - The coplanar transmitter-receiver pair are separated by 5.5 meters and utilize a "high frequency" signal of 4018 Hz. This configuration couples best with horizontal tabular targets. The transmitter and receiver coils for the two frequencies are located at the ends of the six meter sensor that is commonly called a "bird". The bird is towed 30 meters below the helicopter by means of a suitable cable which also carries the electric signals to and from the bird.

Changes in the alternating electromagnetic field at the receiver coil caused by eddy currents in the subsurface rock are recorded. These changes are expressed in ratios of the normal undistorted primary field. They are so small as to be expressed in parts per million (ppm). The electromagnetic instrument was manufactured by GEONICS LTD of Mississauga, Ontario with modification done by Geotech Ltd. of Ontario.

MAGNETOMETER

The magnetometer that was used on this survey was a Geometrics Corp Model 803. It is a total field nuclear precession instrument that measures the magnetic field strength with a resolution of 1 gamma. The sensor is a toroidal coil and is positioned 20 meters below the helicopter.

The measuring technique of the proton magnetometer can be understood by making the proton analogous to a tiny bar magnet spinning about its longitudinal axis, which has the properties of both a magnetized needle and a gyroscope. The spinning magnet tries to align itself along the lines of force but the gyroscopic properties oppose this and the spinning magnet gyrates. The essential characteristic of the system is that the rate of gyration is proportional to the ambient magnetic intensity. This rate is measured electronically, multiplied by a suitable factor and then displayed on the chart and recorded on magnetic tape.

ANCILLARY EQUIPMENT

UDAS data acquisition system with digital printer.

Geocam 35 mm flight path camera

King Radio Altimeter.

Geometrics G 826 magnetic base station and recorder

HELICOPTER

The Bell Long Ranger Helicopter was supplied by Capital Helicopters of Vancouver, B.C.

APPENDIX II

THE ANALOGUE CHART AND FLIGHT PATH RECOVERY

The in-flight chart is a roll of heat sensitive paper which moves through the digital printer at a speed of 5.48 cm per minute.

The digital printer chart facilitates the use of a full alpha-numeric system. All "header", sensitivity and fiducial information is printed on the chart automatically.

The helicopter flight path is recovered from 35 mm film, which is exposed at 2 second intervals while the helicopter is on survey traverse. After processing and annotating, recognizable fiducials(pictures) are pin-pointed on the photomosaic map, which provides the basic positioning control for the flight lines. The geophysical data are extrapolated between the control points.

APPENDIX III

SURVEY PERSONNEL

Field Geophysicist	Ronald F. Sheldrake 1271 W. 22nd Street North Vancouver, B.C.
Field Technician	Mr. Chester Bassani C/O Geotech Ltd., Toronto
Helicopter Pilot	Mr. Norman Graham Capital Helicopters Ltd, Smithers, B.C.

APPENDIX IV

This is a description of the mineral deposits and geological environment of the Quesnel Basin that has been taken from a report written by Donald G. Allen, titled "Geological Report on the TOR Claim, for Micrometer Development Corporation, June 7, 1984.

"The area of interest is underlain by a thick sequence of mainly Upper Triassic and Lower Jurassic volcaniclastic and sedimentary rocks that lie in a fault bounded structure termed the Quesnel Trough (Campbell and Tipper, 1970). It is a northwesterly trending feature about thirty-five kilometers wide which is flanked on the east by Proterozoic and Paleozoic strata of the Omineca geanticline and on the west by Upper Paleozoic rocks of the Pinchi geanticline. Intrusive rocks in the trough fall into two age groups. Those grouped as 200 m.y.+/- include

two types: 1.plutons and batholiths such as the Takomkane batholith and vary in composition from the granodiorite to quartz diorite and 2. small alkalic stocks that are apparently coeval with enclosing volcanic rocks and vary in composition from syenite through diorite to pyroxenite; and plutons of the 100 m.y.+/- age group are primarily biotite quarts monzonite and granodiorite and are commonly porphyritic. One such intrusion of the latter outcrops in the Quesnel river valley ten kilometers southwest of the TOR CLAIMS(Q.R. Deposit) and another unmapped intrusion, about five kilometers northwest of Maud Lake.

The geology and mineral occurrences of the Cariboo Quesnel gold belt have been summarized by Saleken and Simpson(1984) and in part by Brock(1984)." ...

"In addition to the well known placer gold deposits, three significant mineral deposits occur in the Cariboo-Quesnel gold belt. The Q.R. prospect, a gold deposit currently being explored by Dome Mines Ltd., has reserves of 950,000 tons grading 0.21 oz/ton gold (1981 Dome Mines Annual Report).

The Cariboo Bell deposit is a large tonnage low grade copper-gold deposit currently being explored by E & B Exploration. Mineable open pit reserves are 117 million tons grading 0.31 % copper and 0.012 oz/ton gold (Saleken and Simpson, 1984).

The Fraser gold prospect is currently being explored by Amoco and Eureka. Reserves are reported at 11 million tons grading between 0.04 and 0.05 oz/ton gold (north American Gold Mining News, January 15, 1984). In addition, recent discoveries in the area have been made by Dome Mines - QR West and Maud deposits."...

CERTIFICATION

I, RONALD F. SHELDRAKE, of the City of Vancouver, Province of British Columbia, hereby certify as follows:

1. I am President of Apex Airborne Surveys Ltd., a company incorporated under the laws of the Province of British Columbia.
2. The Vancouver office of Apex Airborne Surveys Ltd. is located at Suite 810 - 625 Howe Street, Vancouver British Columbia.
3. I received my degree in Geophysics (B.Sc.) from the University of British Columbia in May 1974.
4. I have practiced my profession since that date.
5. I have no interest, direct or indirect, other than payment for this work, in the properties or claims of Dave Stewart or his associated companies nor do I expect to receive any.
6. I consent to the use of this report in, or in connection with, a prospectus, engineering reports or in a Statement of Material Facts.

May 15, 1986

Ronald F. Sheldrake

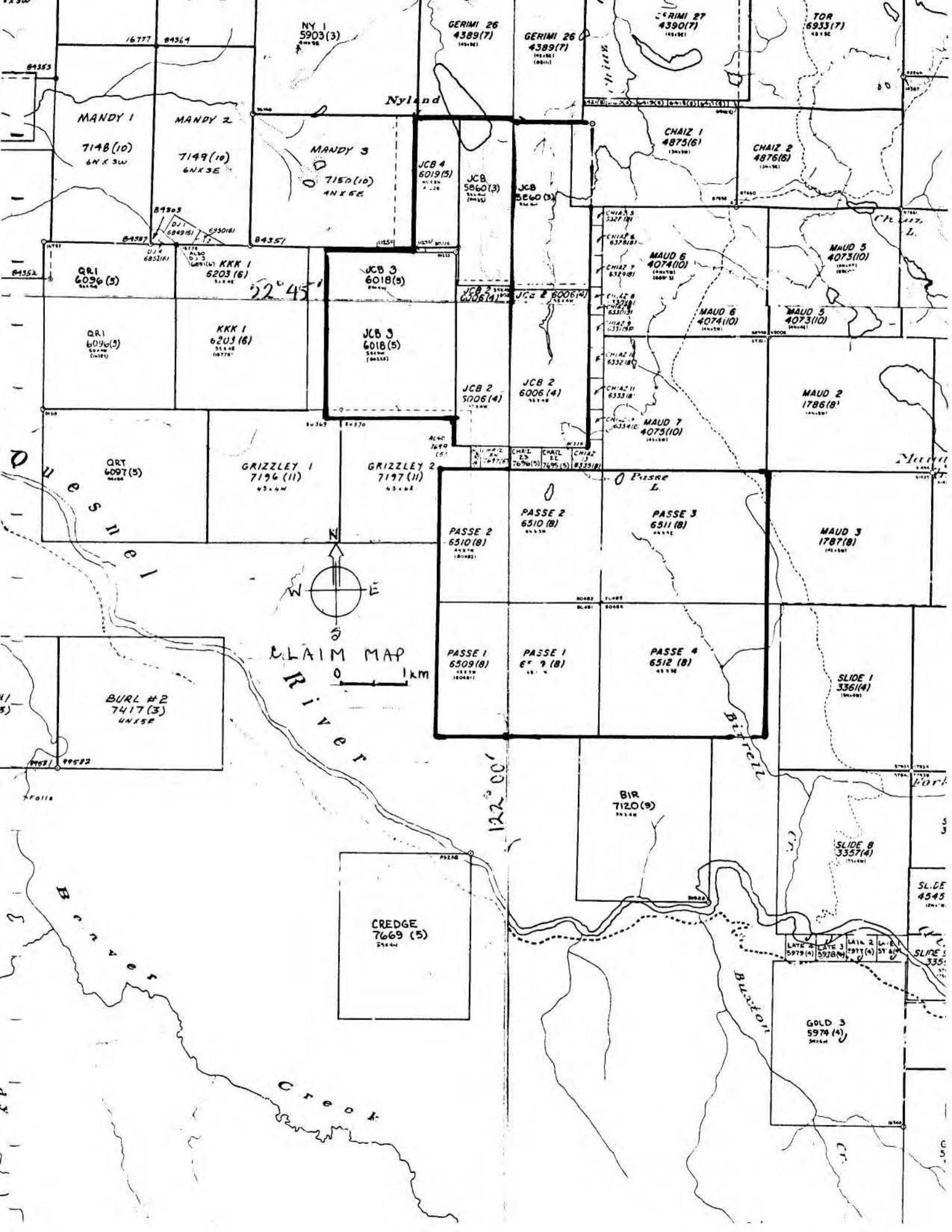
Ronald F. Sheldrake

Apex Airborne Surveys Ltd.

May 15, 1986

STATEMENT OF COSTS

Type of surveys:	Helicopter Electromagnetic-Magnetic
Dates of fieldwork:	March 2-4, 1986
Survey Kilometers:	125 kilometers airborne traverse.
Additional Charges:	None
Total cost of survey:	$ 20,000.00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BIR
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SLIDE 8
3357(4)
CREDGE
7669(5)
GOLD 3
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River
Bridge
Creek
Bitrell
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52° 45'
CLAIM MAP
0
1km

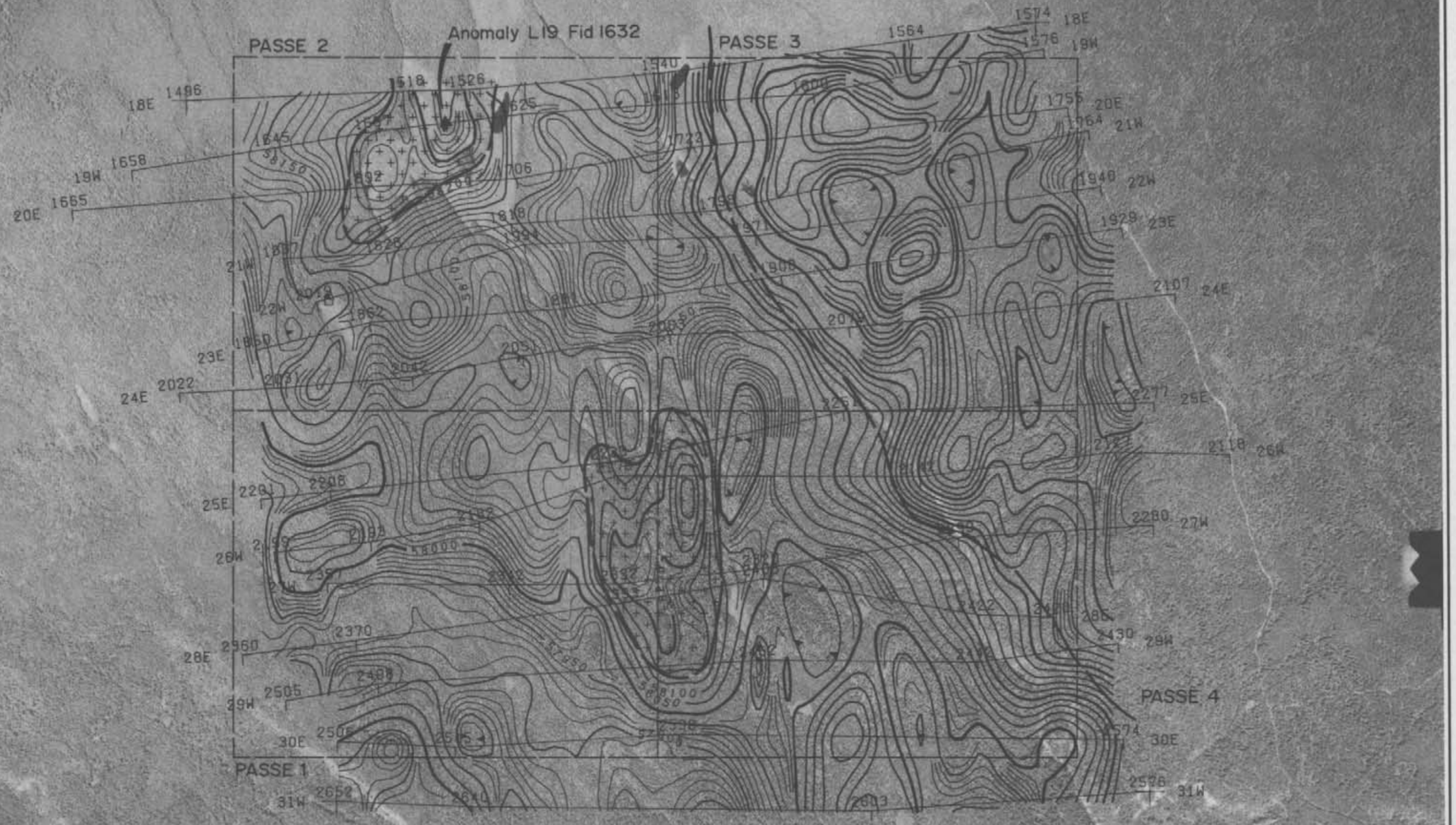

PLATE 1A

Mr. DAVE STEWART

TOTAL FIELD MAGNETIC CONTOUR MAP PASSE 1-4 CLAIMS

Cariboo Mining Division

0 500 1000 metres

NTS 93A/12,13 and 93B/9,16

PHOTO. N° 78099/56

APEX AIRBORNE SURVEYS LTD.

May 15, 1986

LEGEND

Contact

Magnetic unit

Claim boundary

PLATE 1

Mr. DAVE STEWART

TOTAL FIELD MAGNETIC CONTOUR MAP

JCB 1-4 CLAIMS

Cariboo Mining Division

0 500 1000 metres

Scale 1: 20,000

N.T.S. 93A/12,13 and 93B/9,16

PHOTO Nº 78099/34

APEX AIRBORNE SURVEYS LTD.

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LEGEND

Contact

Magnetic unit

Claim boundary

JCB 4

JCB 1

JCB 3

JCB 2

Mineralized outcrop

PLATE 2

Mr. DAVE STEWART

ELECTROMAGNETIC PROFILES MAP

(Low frequency, 933 Hz, coaxial coils)

JCB 1-4 CLAIMS

Cariboo Mining Division

0 500 1000 metres

Scale 1:20,000
Vertical scale 1cm = 10ppm

N.T.S. 93A/12,13 and 93B/9,16

PHOTO. Nº 78099/34

APEX AIRBORNE SURVEYS LTD.

May 15, 1986

LEGEND

Quadrature

In-phase

Claim boundary

JCB 4

JCB 1

JCB 3

JCB 2

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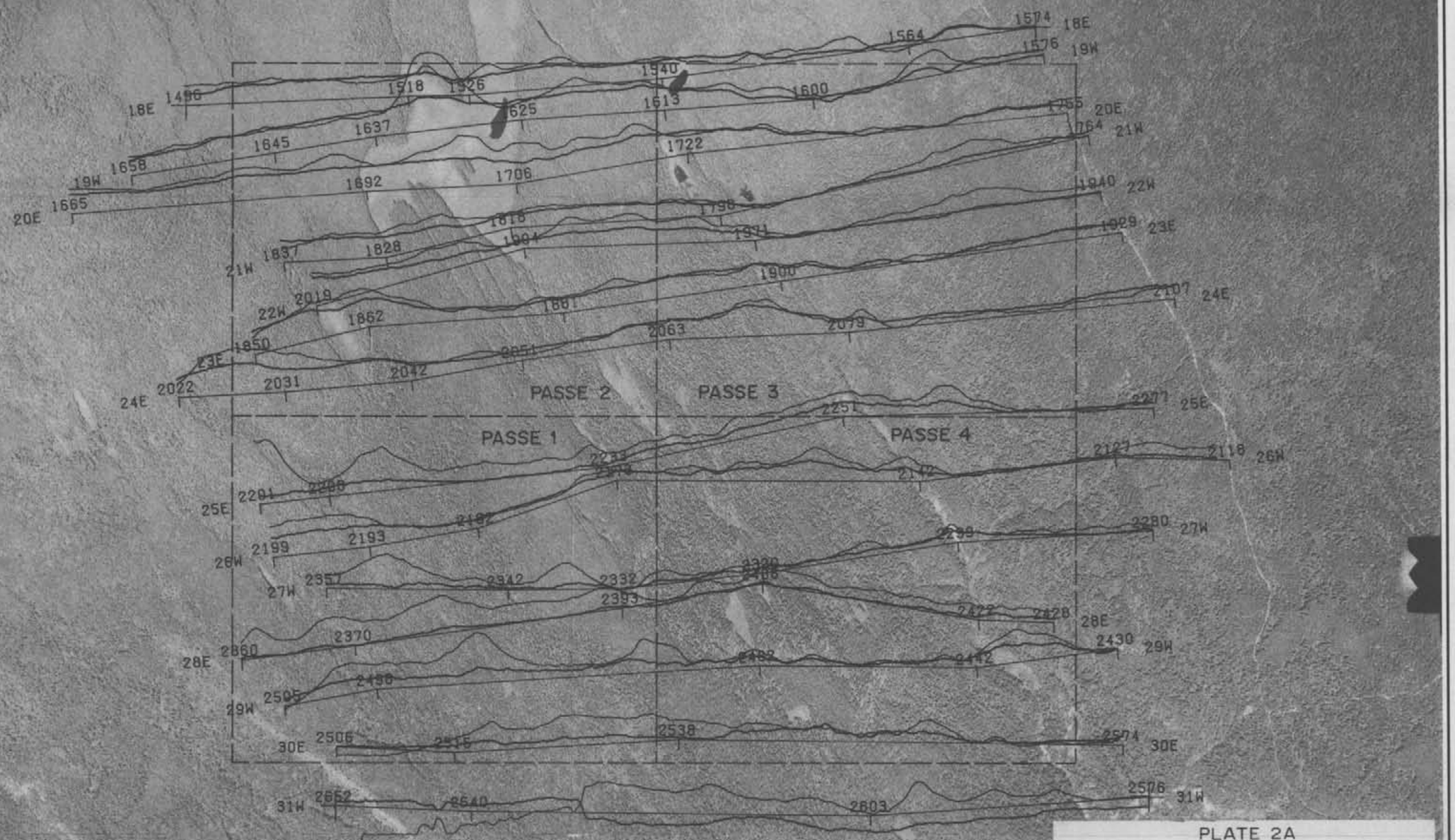

PLATE 2A

Mr. DAVE STEWART

ELECTROMAGNETIC PROFILES MAP

(Low frequency, 933 Hz, coaxial coils)

PASSE 1-4 CLAIMS

Cariboo Mining Division

0 500 1000 metres

Scale 1:20,000
Vertical scale 1cm = 10 ppm

NTS 93A/12,13 and 93B/9,16
PHOTO. Nº 78099/56

APEX AIRBORNE SURVEYS LTD.

May 15, 1986

LEGEND

Quadrature

In-phase

Claim boundary

PLATE 3

Mr. DAVE STEWART

ELECTROMAGNETIC PROFILES MAP

(High frequency, 4018 Hz, coplanar coils)

JCB 1-4 CLAIMS

Cariboo Mining Division

0 500 1000 metres

Scale 1:20,000
Vertical scale 1cm = 20 ppm

N.T.S. 93A/12, 13 and 93B/9, 16

PHOTO. Nº 78099/34

APEX AIRBORNE SURVEYS LTD.

May 15, 1986

LEGEND

Quadrature

In-phase

Claim boundary

JCB 1

JCB 2

JCB 3

JCB 4

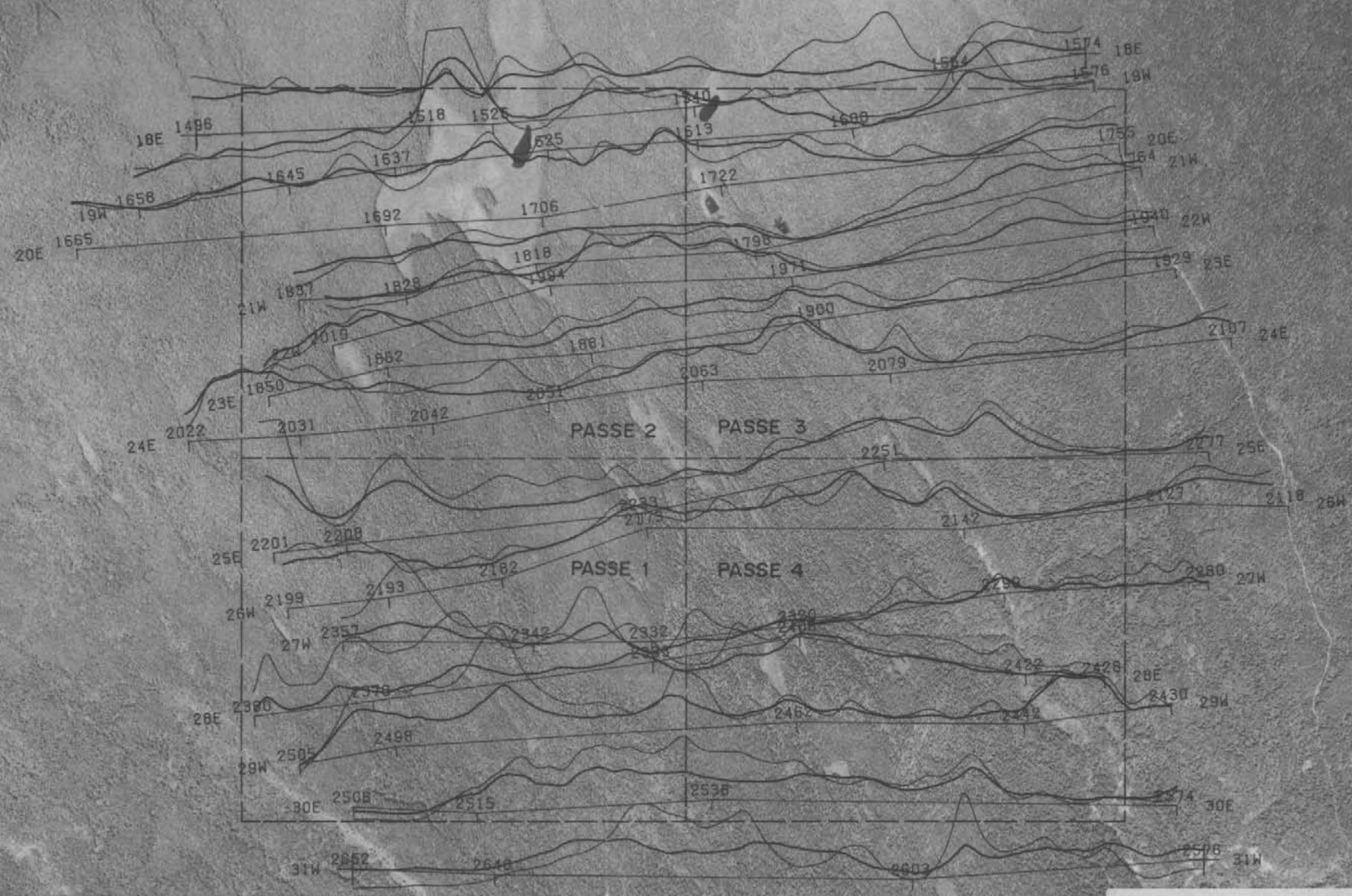

PLATE 3A

Mr. DAVE STEWART

ELECTROMAGNETIC PROFILES MAP

(High frequency, 4018 Hz, coplanar coils)

PASSE 1-4 CLAIMS

Cariboo Mining Division

0 500 1000 metres

Scale 1:20,000
Vertical scale 1cm = 20 ppm

NTS 93A/12,13 and 93B/9,16

PHOTO Nº 78099/56

APEX AIRBORNE SURVEYS LTD.

May 15, 1986

LEGEND

Quadrature

In-phase

Claim boundary