84-1214 - 13401

ADAMS LAKE PROPERTY
AIRBORNE ELECTROMAGNETIC SURVEY

CAESAR 1 & 2; CHRIS 1 & 2; Eric 1.

KAMLOOPS MINING DIVISION

NTS 82 M/4

LATITUDE 51° 10'N. 10/85

Longtitude 119° 40' W

OWNER - OMNI RESOURCES INC.

OPERATOR - QUESTOR SURVEYS LTD.
FOR OMNI RESOURCES INC.

BY

DANIAL MARTYN

PROJECT GEOPHYSICIST.

Dec. 12 1984.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,401 PART 1 OF 2

Questor Surveys Limited, 6380 Viscount Road, Mississauga, Ontario L4V 1H3

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1. INTRODUCTION

This report details the operation and interpretation of a Helicopter INPUT electromagnetic and magnetic survey. The survey was commissioned on October 5, 1984 by Omni Resources Incorporated of Vancouver, British Columbia. The survey area is located in the vicinity of the Adams Plateau area of British Columbia, just west of Adams Lake, as outlined on the location map at the end of this report.

The electromagnetic system utilized for the survey was the Barringer/Questor MK VI INPUT system with receiver and transmitter specifications as described in Appendix A of this report.

The survey Helicopter (C-GLMC) arrived in Barriere, British Columbia on June 22, 1984. The survey commenced on June 25, and was completed on June 26, with reflights being completed on June 30, 1984. In total, 50 line kilometres were flown for the survey. The field operations were conducted from Barriere, British Columbia and communication regarding the operations were overseen by J. Bergvinson of Omni Resources Inc. of Vancouver.

2. SURVEY OPERATIONS

2a. Survey Procedure

During the survey, the Helicopter maintained a terrain clearance as close to 122 metres as possible, with the receiver coil (bird) at approximately 45 metres above the ground surface. In areas of substantial topographic relief, the Helicopter height may exceed 122 metres for safety reasons. The height of the bird above the ground is also influenced by the Helicopter's air speed (see figure C-1 in Appendix C), which was maintained at an average of 60 knots, while on survey.

The survey traverse lines for the survey area were flown in the following manner:

BLOCK	LINE DIRECTION	SPACING BETWEEN LINES
A	Northeast-Southwest	200 metres

Whenever possible, the traverse lines were flown in alternate flight directions (ie: northeast then southwest) facilitating the interpretation of dipping conductors. When the traverse line spacing exceeded 50% the normal spacing interval over a kilometre distance, the gap was filled with an appropriately spaced fill-in line at a later date.

The details of each flight are documented on the flight logs by the equipment technician. The logs include the survey times, line numbers and fiducial intervals, as well as a record of equipment irregularities and atmospheric conditions. One may refer to these logs in order to relate the flight path film to the geophysical data.

2b. Production

The following table summarizes the production during the survey operations:

DATE	FLT NO.	PRODUCTION	NON PRODUCTION WX	EQPT	SFERICS	MAG	COMMENTS
1984							
Jun.22	124						Arrived in Barriere.
Jun.23	125						Other work.
Jun.24			X				
Jun.25	126	X					
	127	X					
	128						Other work
Jun.26	129	X					
	130	X					
Jun.27-29			X				And other work.
Jun.30	135	X					Tie-line completed. Departed Barriere.

WX - weather

EQPT - equipment problems

SFERICS - atmospheric noise (tweaks)

MAG - magnetic storm

2c. Equipment

The survey equipment and Helicopter used for the survey are summarized in Appendices A and B, respectively. Briefly, the following equipment was utilized for the survey:

a) Bell 205A-1 Helicopter (Canadian Registration C-GLMC);

b) Barringer/Questor Mark VI INPUT E.M. System;

c) Geometrics Model 803 Proton Precession Magnetometer;

d) Sonotek Acquisition System;

e) RMS Analog Recorder;

f) Geocam 35mm. frame/strip camera;

g) Sperry Radar Altimeter;

h) Digidata Digital Recorder.

The equipment, such as the INPUT system, magnetometer and radar altimeter were regularly calibrated at the beginning and end of each survey flight as well as in mid-flight, whenever necessary. Details of the calibration procedures are given in Appendix C.

The continuous chart speed of the RMS recorder was set at 4 ins/min. or 10 cm./min.

2d. Survey Personnel

The survey crew was made up of the following experienced Questor and Trans Canada employees:

Geophysicist	Dan Martyn
Pilot	Bob Masson (Trans Canada)
Navigator	Bill Smith
Operator	Dan Makos
Engineer	John Caza (Trans Canada)

2e. Magnetic Diurnal

Diurnal variations in the earth's magnetic field had been recorded using a base station equipped with a Geometrics Model 826 Proton Precession Magnetometer. It was monitored periodically during the day for severe diurnal changes (magnetic storms). A variation of greater than 20nT over a 5 minute time period was considered to be a magnetic storm. During such an event, the survey would normally have been discontinued or postponed and the survey data would have been scrubbed.

The base station was set up at the Y-Motel in Barriere, British Columbia.

Several control lines were flown over the larger survey blocks, at approximately right angles to the traverse line directions. For those traverse lines, crossed by one or more control lines, a computer process has calculated the intersection positions (fiducials of the control and traverse lines), and has tabulated the magnetic values and gradients.

The differences were analysed and a correction was applied, where required, to the magnetic field in the form of a linear sloping datum along the traverse line.

2f. Recovery

The flight path of the Helicopter by a frame camera on black and white, 125 ASA, 35mm. film. The aperture setting on the camera can be manually adjusted by the operator during flight, assuring the proper exposure of the film. The camera is fitted with a wide angle 18mm. lens.

Recovery of the flight path is performed by comparing the negative of the film to the topographic features of the recovery mosaic. Coincident features are picked and plotted on the mosaic. They are annotated with a fiducial number (timing mark) which is printed on the film. Points are picked at an average interval of one per kilometre whenever possible. On the final presentations, the picked points are indicated on the flight path by means of a dot. Major fiducials are marked as ticks along the flight line, and the first and last ticks on a line are numbered. These fiducial marks are interpolated. A list of the picked points are given at the end of the report, according to line number.

The processing of the film and recovery of the flight path are performed in the field by the data technician. The recovery is kept up on a daily basis assuring proper flight line coverage of the job and immediate interpretation of the INPUT results.

The completed flight path is digitized accurately on a flat-bed digitizer at QUESTOR using the picked point co-ordinates. The recovery is then routinely verified by a computer program 'speed check', which flags any abnormalities in the distance per fiducial unit between picked points on a traverse line. As a final check, the rough magnetic contour maps are examined for contour irregularities that could be attributed to recovery errors.

3. DATA PRESENTATION

3a. Map Compilation

In preparation for the survey, all necessary topographic maps and air photographs were secured from B.C. Maps, Ministry of the Environment and prepared for navigational and flight path recovery purposes by QUESTOR SURVEYS LIMITED.

The photomosaic used in the field for the flight strips and flight path recovery was photographically enlarged from a controlled ortho-photographic mosaic, which was constructed from 1982, 1:50,000 photographs. This photomosaic was at a scale of 1:50,000. The final data presentation is on a screened cronaflex photomosaic base map at a scale of 1:10,000. The flight path recovery was done on a stable unscreened photomosaic mylar base. The electromagnetic and magnetic data was computer processed at QUESTOR and plotted by DATAPLOTTING SERVICES INC., Toronto, Ont.

3b. Products

The following products are supplied:

i) a controlled ortho-photographic mosaic base map using 1982 aerial photography at a scale of 1:10,000;

ii) a photomosaic base map showing flight lines, Electromagnetic anomalies, and interpretation at a scale of 1:10,000;

iii) white prints of the above;

iv) xerox copies of the flight log;

v) anomaly data sheets;

vi) a photomosaic base map showing combined Electromagnetic and Magnetometer results with flight lines at a scale of 1:10,000;

vii) a clear Cronaflex overlay showing contours of the magnetic total field at 10 gamma intervals at a scale of 1:10,000;

viii) computer generated analogue profiles at a scale of 1:10,000;

ix) an Applicon regular colour and shadow plot of the magnetics to cover the entire survey area at a scale of 1:50,000 with major topography features outlined;

x) brief interpretative report.

4. GEOLOGICAL PERSPECTIVE

The entire survey block is covered with Devonian rock units and in some areas, may even be older rock types. The bedding of the individual rock units are quite thick, anywhere from 1200 metres to 2500 metres.

Beginning at the north end of the survey block, near Johnson Lake, a thick layer of medium to dark green calcareous chlorite schist and fragmental schist derived largely from mafic to intermediate volcanic and volcaniclastic rocks; lesser amounts of limestone and dolostone; minor amounts of quartzite, grey phyllite, and sericite-quartz phyllite. Stratigraphically below this unit is a thick layer of Tshinakin limestone. It is estimated to be upwards to 1400 metres thick, and covers the middle half of the survey block. Below this unit is another layer of calcareous chlorite schist. The layer is quite thick and extends beyond the southern boundary of the survey area.

If one refers to the geology map, Preliminary Map No. 56, it will be noted that a major north-south fault zone traverses through the eastern edge of the block. East of this fault zone, towards the southeast edge of the block, there exists a layer of dark to light grey siliceous and/or graphitic phyllite, calcareous phyllite, limestone, calc-silicate, cherty quartzite.

Strike direction tends to be east-west although in isolated areas, a northwest-southeast direction occurs. Direction of dip, in referring to the geology map, is toward the north or northeast with attitudes in the range of 35° to 50°.

Overburden is considered to be generally resistive with a few isolated locations being possibly conductive. These would be in areas where one channel and some two channel anomalies have been plotted.

5. INPUT INTERPRETATION

All interpreted natural E.M. anomalies have been selected. They are plotted as to their flight line locations and anomaly-type classification on the interpretation map. Two types of anomalies have been distinguished and they are bedrock and surficial. There are no cultural (man-made) conductors in the survey area.

An anomaly listing, at the back of this report summarizes all selected anomalous responses in numerical sequence. The listing includes the following specifications for each anomaly: anomaly number, fiducial location, anomaly type, channel classification, amplitude of channels one to six in parts-per-million, conductivity-thickness product in siemens, associated magnetic peak location, intensity of magnetic anomaly in nT and altitude of aircraft above the ground surface in metres. The anomaly label is comprised of four elements, for example:

20200A

2 - first digit signifies the block (BLOCK B);

020 - next three digits signify the flight line number (line 20), control lines are differentiated by having a number 9 in the first position;

0 - fifth digit indicates the number of flight attempts;

A - a letter is assigned to each anomaly, which corresponds to the anomaly's sequential order along the flight line. Natural anomalies are in capital letters, while culture responses are in small letters.

Questor's alphabet is as follows:
ABCDEFGHJKLMNPRSTWYZ.

In addition to the standard anomaly parameters, an "anomaly type" classification has been added. The letters correlate with the plotted symbols according to the following table:

Anomaly Type	Response Source (see map legend)	Symbol
Blank	bedrock conductor	circular
S	surficial (overburden or lake bottom)	diamond
U	up-dip, accessory peak to main response	half circle and half diamond, the diamond end "pointing" in the dip direction
P	poorly defined response	asterisk "*" in lower left quadrant
C	culture	square

Responses classified as "P" are poorly defined bedrock anomalies which exhibit relatively weak INPUT signatures. Potentially, responses of this weak nature could be the result of a deeply buried bedrock conductor or conductive overburden.

In addition to the plan presentations of the INPUT anomalies, listed in Section 3(a), a scaled profile map of the E.M. channel 1 amplitudes have been plotted. No filter has been applied to the raw data. The profile is provided in this report. It introduces a visual comparison of consecutive responses with respect to their response characteristics (amplitude and width) and their spatial position to one another.

The survey area contains a belt of formational-type bedrock conductors, which occupy the eastern side of the block. They have been referenced on the interpretation map by numbers 8a to 8j and 9a to 9d. They coincide with a prominant N-S fault system. The fault system has disrupted the formational conductors, which is evident by the offset of conductors 8a and 8b with those of 8f and 8g and the abrupt termination of conductors 9a to 9d along the fault. This would suggest that the faulting occurred after the formation of these conductors. Conductors 9a to 9d appear as discrete conductors but in actual fact they are part of a much longer conductive trend of formational conductors just outside the block. The formational conductors generally exhibit moderate conductivity-thickness values and channel amplitudes indicating near-surface origins. Conductor depths have been estimated for a few select anomalies. They are plotted on the interpretation map.

Normally, formational conductors are taken to be of no economic importance because most are mineralized with graphite and/or iron sulphides. However, in this region, they may have some significance because of their direct or indirect relationships with contact zones and shear zones. For example the Kamad Silver occurrence is situated in highly pyritic quartz sericite schist along the north side of Sinmax Creek Valley. Its mineralization occurs along shear zones, which intersects the host at a small angle. The Adams Silver occurrences near the head of Spillman Creek on the plateau are localized at volcanic-sedimentary contacts that are frequently associated with formational-type conductors.

Conductors 7a and 7c have been interpreted as arising from conductive surficial sediments. The local topography may have encouraged the deposition of conductive sediments into thick ribbon-like deposits. These deposits give rise to particularly deceptive responses, which often exhibit quick decay rates, early channel detection and broad amplitudes. On the otherhand, contact and shear zones that are poorly mineralized with graphite/iron sulphides have been known to give similar weak responses. A quick ground survey utilizing a VLF instrument would aid in resolving the source of these three conductors.

As a personal preference, I have chosen 6 targets, which I consider to be high priority follow-up targets. They show good promise of originating from massive sulphide mineralization. The previously mentioned formational conductors are assigned medium priority statuses. While the remaining randomly situated intercepts in the survey area are low priority targets due to their very weak nature. A brief summary of the six targets follows:

CONDUCTOR 1

Intercept: 20531M

Intercept 20531M is a weak three channel anomaly whose channel amplitudes and ratio indicate a bedrock source of moderate conductivity to be situated sub-surface. The overburden cover in the survey is non-conductive. Therefore, maximum penetration of the system is likely and good discrimination of weak conductors such as 20531M are possible. The conductor is located just north of a long formational conductor (8e).

At the present time, it is felt that CONDUCTOR 1 is an isolated conductor and not part of conductor 8e. This is based on dissimilar response signatures between the two conductors and the fact that CONDUCTOR 1 does not exactly correspond to the N-S strike of CONDUCTOR 8e.

CONDUCTOR 2

Intercepts: 20451A, 20462A, 20471A.

CONDUCTOR 2 appears to be a weak bedrock conductor that has a strike length of approximately 500 metres. It extends just outside the western survey boundary to a weak intercept on flight line 20442N. The conductor exhibits a weak conductance, which explains the apparent stagger of the intercept positions on either side of the interpreted conductor axis. The conductor is situated along the southwestern flank of a large magnetic high. This association suggests that the source of conductivity may perhaps arise as a result of a mineralized contact.

CONDUCTOR 3

Intercept: 20402A

Intercept 20420A is an exceptional INPUT response. Its response characteristics and discrete location away from any formational conductors makes it a prime candidate for a high priority ground investigation. The channel amplitudes of its response are small and broad indicating that it originates from a deep bedrock source, perhaps in the neighbourhood of 75 metres below the surface. Its channel ratios reveal a highly conductive source of 17 siemens. This high conductivity could also mean that the conductor is of significant size and mass.

Magnetically, there appears to be no direct magnetic association with the intercept. If there had been a small magnetic correlation (5 to 50nT), pyrrhotite mineralization would have been suspected.

CONDUCTOR 4

Intercept: 20402B

Intercept 20402B is part of a conductive trend that continues some 600 metres beyond the northern survey boundary in a northwest direction. The conductor is situated by itself and does not appear to belong to any major belt of formational conductors. The conductor at intercept 20402B is very conductive and is buried in the vicinity of 50 to 75 metres below the surface. A close look at intercept 20402B on the analogue records reveals that its response is asymmetrical in shape. This asymmetry is attributed to a sheet-like conductor, which is dipping to the southwest.

CONDUCTOR 5

Intercept: 20422H

CONDUCTOR 5 is an isolated zone of conductivity, which is believed to originate from within the bedrock. Due to the weak nature of the response as well as its shape, it can be said that the source is located fairly close to the surface. It warrants a high priority ground check because of its discreteness and probable bedrock origin. Its source may be of limited size and depth extent but is sufficiently conductive to be coupled with an airborne electromagnetic system.

CONDUCTOR 6

Intercepts: 20450L, 20462C

The conductor has been intercepted by two anomalies within the survey block and by another of similar quality on line 20442, immediately outside the northern boundary. The strike direction of the conductor's axis agrees well with the flank of a local magnetic high. This suggests that the conductor may have formed in a geological contact. As to its depth, an estimate of 75 metres has been determined assuming the conductor is steeply dipping, otherwise this value would be an overestimation.

In terms of order, the other five targets should be investigated prior to CONDUCTOR 6 simply because they show better promise of originating from massive sulphides.

6. CONCLUSIONS AND RECOMMENDATIONS

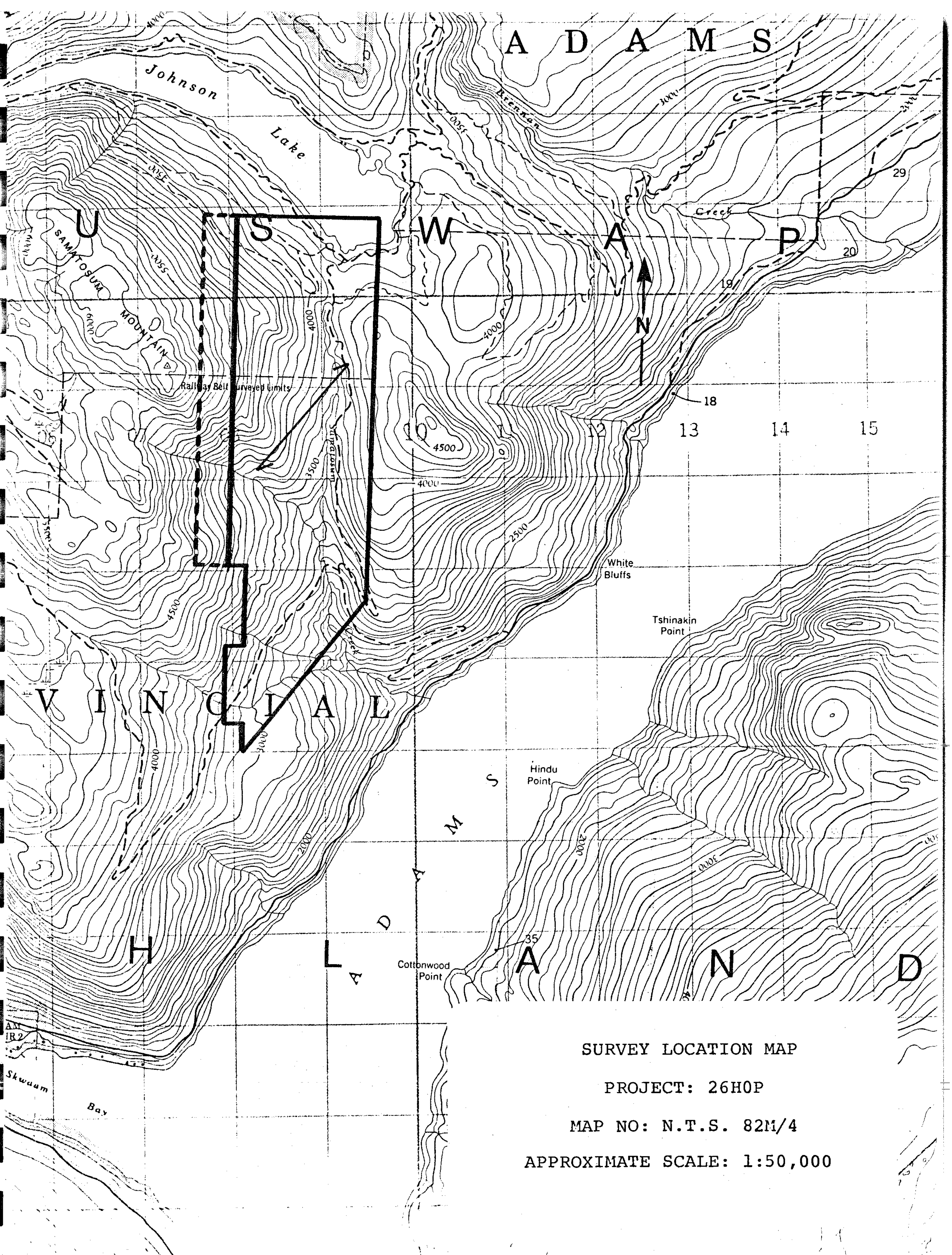
The INPUT survey has revealed 6 zones of bedrock conductivity, which shows good promise of massive sulphide-bearing conductors. The conductors have been briefly described in the report and are assigned high priority ground follow-up statuses.

Numerous formational-type conductors have been intercepted in the survey. These conductors should be further examined by the Project Geologist with the aid of available field geophysics, geology and geochemical information to evaluate their individual significance in terms of containing concealed massive sulphide mineralization.

If a detailed airborne magnetic interpretation has not already been done in the survey area, it would be well worth the effort.

Respectfully submitted,
QUESTOR SURVEYS LIMITED

Danial Martyn,
Project Geophysicist.



SURVEY LOCATION MAP

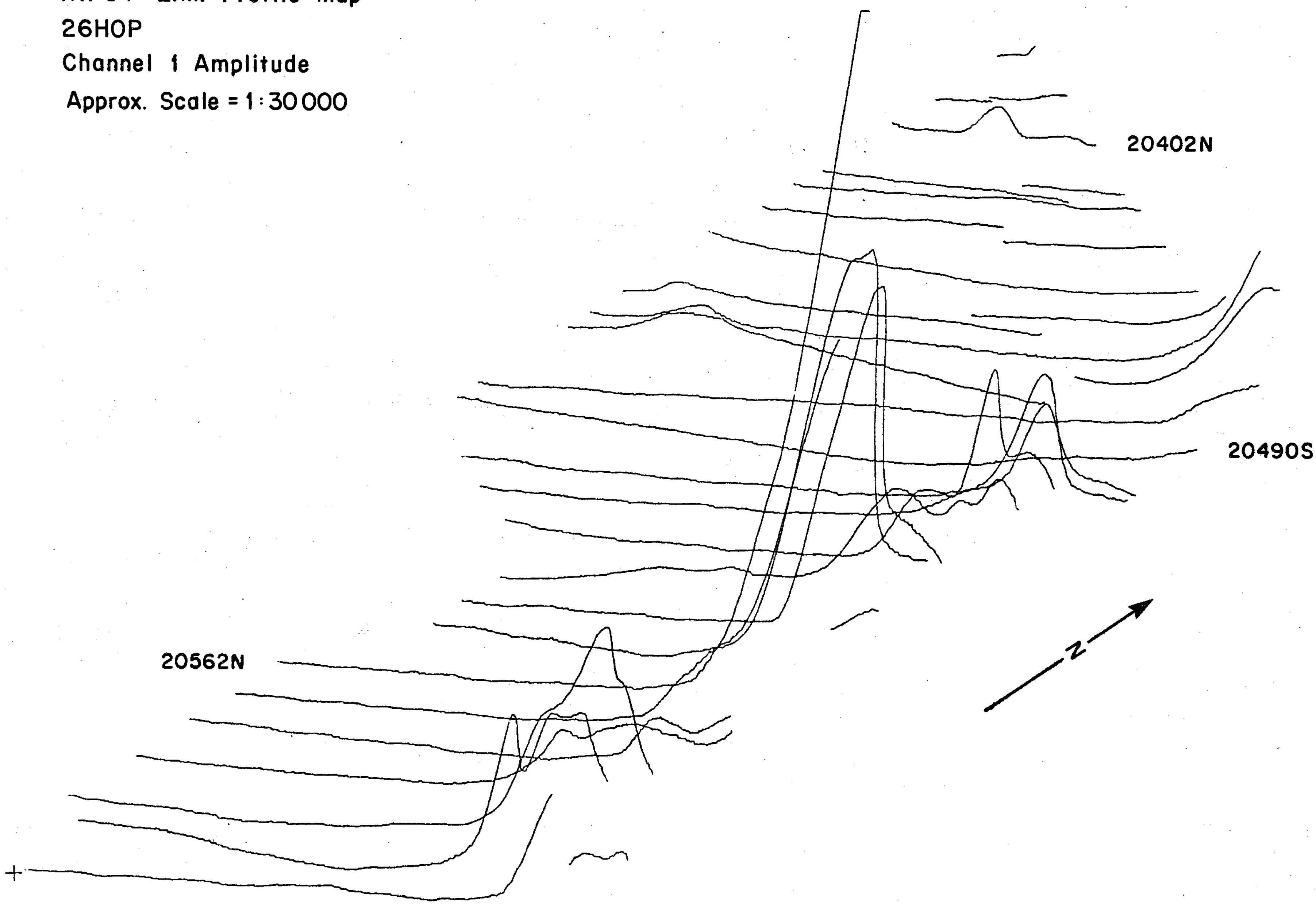
PROJECT: 26HOP

MAP NO: N.T.S. 82M/4

APPROXIMATE SCALE: 1:50,000

ADAMS LAKE
OMNI RESOURCES INC.

INPUT E.M. Profile Map
26HOP
Channel 1 Amplitude
Approx. Scale = 1:30000



APPENDIX A

BARRINGER/QUESTOR MARK VI INPUT(R) Helicopter System

The INduced PUlse Transient (INPUT) method is a system whereby measurements are made, in the time domain, of a secondary electromagnetic field while the primary field is between pulses. Currents are induced into the ground by means of a pulsed primary electromagnetic field which is generated from a transmitting loop around the helicopter. By using half-sine wave current pulses (Figure A-1) and a transmitter loop of large turns-area, a high signal-to-noise ratio and the high output power needed for deep penetration, are achieved.

Induced current in a conductor produces a secondary electromagnetic field which is detected and measured after the termination of each primary pulse. Detection of the secondary field is accomplished by means of a receiving coil, wound on an air core form, mounted in a PCV plastic shell called a "bird" and towed behind and below the helicopter on 76 metres (250 feet) of coaxial cable. The received signal is processed and recorded by equipment within the helicopter.

The axis of the receiving coil may be vertical or horizontal relative to the flight direction. In rolling or hilly terrain the standard or horizontal coil axis is preferred, although in steep terrain, the vertical axis coil optimizes coupling with horizontal or dipping stratigraphy. The secondary field is in the form of a decaying voltage transient, measured in time, at the termination of the primary transmitted pulse. The amplitude of the transient is proportional to the amount of measured in time, at the termination of the primary transmitted pulse. The amplitude of the transient is proportional to the amount of current induced into the conductor, the conductor dimensions, conductivity and the depth beneath the aircraft.

The rate of decay of the transient is inversely proportional to conductance. By sampling the decay curve at six different time intervals and recording the amplitude of each sample, an estimate of the relative conductance can be obtained. Transients due to strong conductors such as sulphides and graphite, usually exhibit long decay curves and are therefore commonly recorded on all six channels. Sheet-like surface conductive materials, on the other hand, have short decay curves and will normally only show a response in the first two or three channels.

For homogeneous conditions, the transient decay will be exponential and the time constant of decay is equal to the time difference at two successive sampling points divided by the log ratio of the amplitudes at this point.

TRANSMITTER SPECIFICATIONS

Pulse Repetition Rate	180 per sec
Pulse	Half sine
Pulse Width	2.0 millisec
Off Time	3.56 millisec
Output Voltage	67 volts
Output Current Peak	200 amperes
Output Current Average	46 amperes
Coil Area	177 $m.^2$ (1,904 $ft.^2$)
Coil Turns	4
Electromagnetic Field Strength (peak)	247,800 amp-turn-$meter^2$

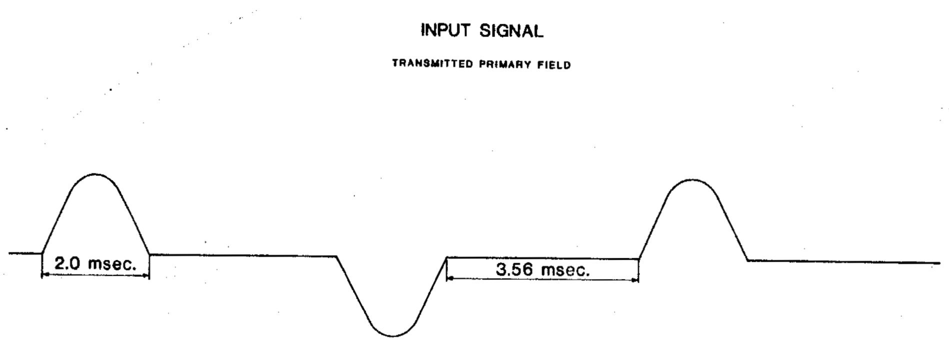


Figure A1

RECEIVER SPECIFICATIONS

Sample Gate	Windows (centre positions)	Widths
CH 1	340 sec	200 sec
CH 2	540	200
CH 3	840	400
CH 4	1240	400
CH 5	1740	600
CH 6	2340	600

Sample Interval	0.5 sec
Integration Time Constant	1.3 sec
Bird Position behind Aircraft (at 40 kt)	19 metres
Bird Position below Aircraft (at 40 kt)	73 metres

Receiver features: Power Monitor 50 or 60 Hz

50 or 60 Hz and Harmonic Filter

VLF Rejection

Spheric Rejection (tweak) Filter

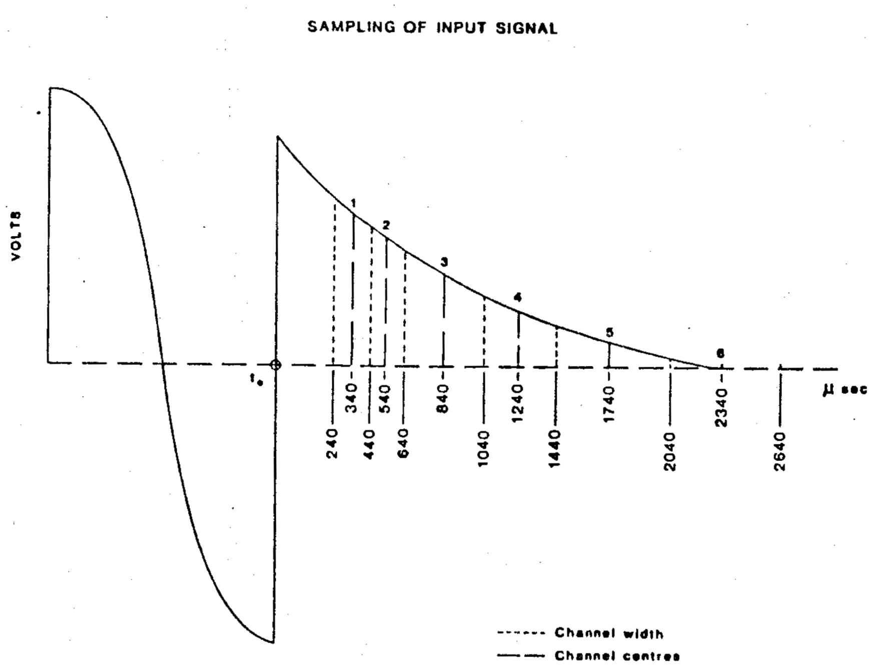


Figure A2

DATA ACQUISITION SYSTEM

Sonotek SDS 1200

9 track 800 BPI ASCII

Includes time base Intervalometer, Fiducial System

CAMERA

Geocam 75 SF

35 mm continuous strip or frame

TAPE DRIVE

Digidata Model 1139

OSCILLOSCOPE

Tektronix Model 305

ANALOG RECORDER

Honeywell Visicorder WS 4010

Kodak Light Sensitive Pape (15cm)

Recording 14 Channels: 50-60 Hz Monitor, 6 INPUT Channels, fine and coarse Magnetics, Altimeter, vertical and horizontal timing lines and fiducial markers.

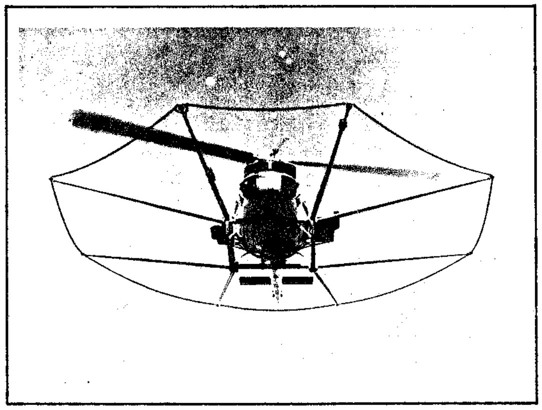
ALTIMETER

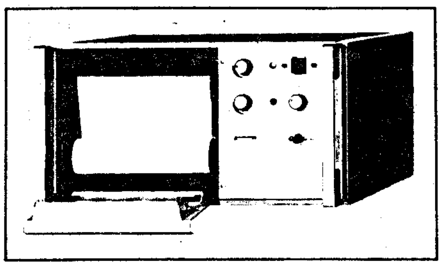
Sperry Radar Altimeter

SONOTEK P.M.H. 5010 PROTON MAGNETOMETER

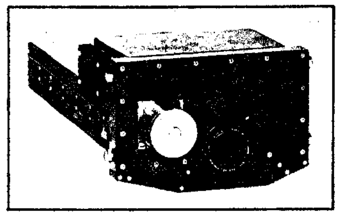
The airborne magnetometer is a proton free precession sensor, which operates on the principle of nuclear magnetic resonance to produce a measurement of the total magnetic intensitity. It has a sensitivity of 1 gamma and an operating range of 20,000 gammas to 100,000 gammas. The sensor is a solenoid type, oriented to optimize results in a low ambient magnetic field. The sensor housing is mounted on the tip of the nose boom supporting the INPUT transmitter cable loop. A 3-term compensating coil and perma-alloy strips are adjusted to counteract the effects of permanent and induced magnetic fields in the aircraft.

Because of the high intensity electromagnetic field produced by the INPUT transmitter, the magnetometer and INPUT results are sampled on a time-share basis. The magnetometer head is energized while the transmitter is on, but a measurement is only obtained during a short period when the transmitter is off. Using this technique, the sensor head is energized for 0.80 seconds and subsequently the precession frequency is recorded and converted to gammas during the following 0.20 seconds when no current pulses are induced into the transmitter coil.

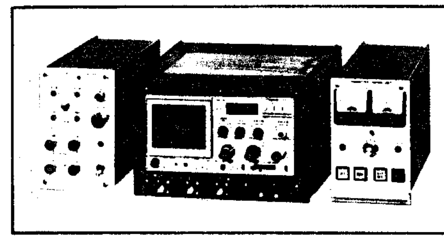




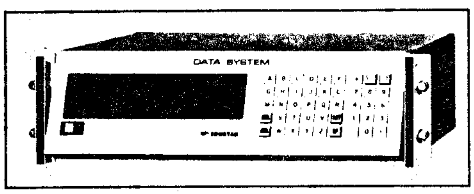
HONEYWELL ANALOGUE CHART RECORDER



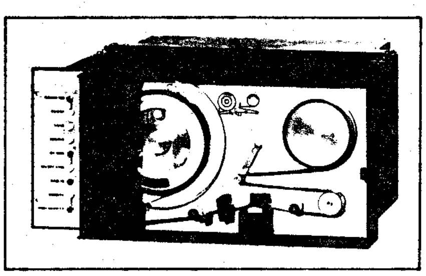
35mm TRACKING CAMERA



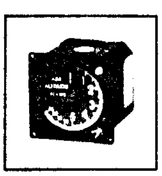
INTERFACE, OSCILLOSCOPE & T.C.U.



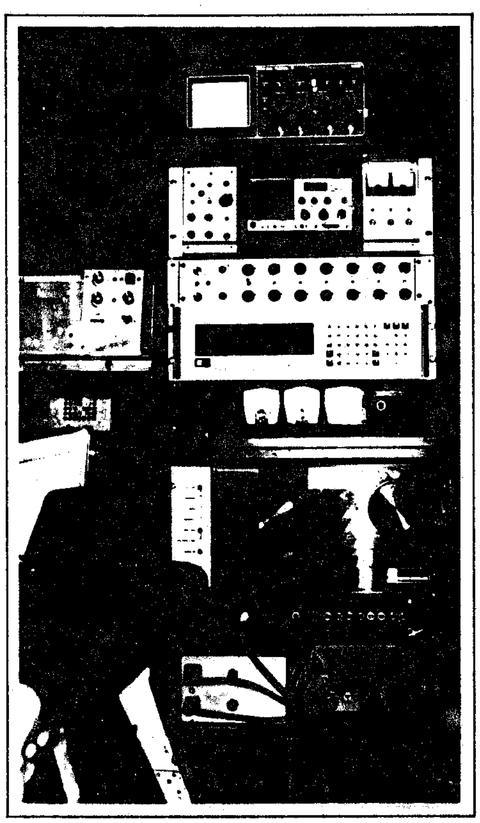
SONOTEK DATA SYSTEM



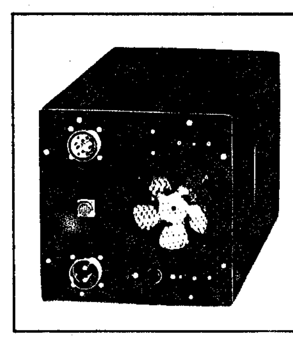
9 TRACK TAPE RECORDER



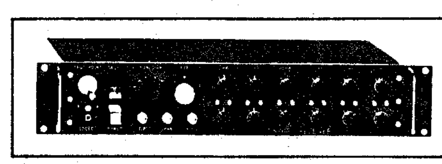
RADAR ALTIMETER



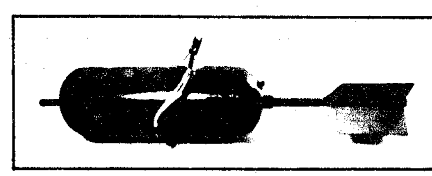
INPUT® EQUIPMENT INSTALLATION



TRANSMITTER



MK VI INPUT® RECEIVER



TOWED "BIRD" ASSEMBLY

QUESTOR/BARRINGER MARK VI "INPUT"® SYSTEM EQUIPMENT

APPENDIX B

The Survey Helicopter

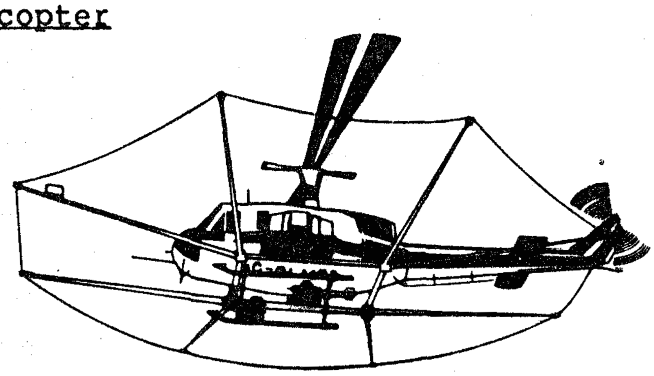


Figure B1

Manufacturer	Bell Helicopter Company
Type	205A-1
Canadian Registration	C-GLMC - present installation
Date of INPUT Installation	May 1982

Modifications:

1) Cradle and wing booms for transmitter coil mounting
2) Camera and altimeter mounting
3) Modified gasoline driven generator system

Any BELL 205-212 airframe can support the QUESTOR Helicopter INPUT system. The 205 is powered by one low maintenance turbine engine. The configuration of the helicopter provides for easy installation of equipment, which can be dissasembled and crated to the survey base. Reassembly takes less than two days. These factors have proven the helicopter to be a reliable and efficient geophysical survey system in areas not suitable for fixed-wing operation.

APPENDIX C

INPUT System Characteristics

a) Geometry

The INPUT system, a time domain airborne electromagnetic system, has the transmitter loop located around the helicopter airframe while the receiver, referred to as the 'bird', typically is towed 19 metres behind and 73 metres below the helicopter at a survey airspeed of 40 knots. The actual spatial position of the bird is dependent on the airspeed of the survey helicopter, as can be seen in Figure C1.

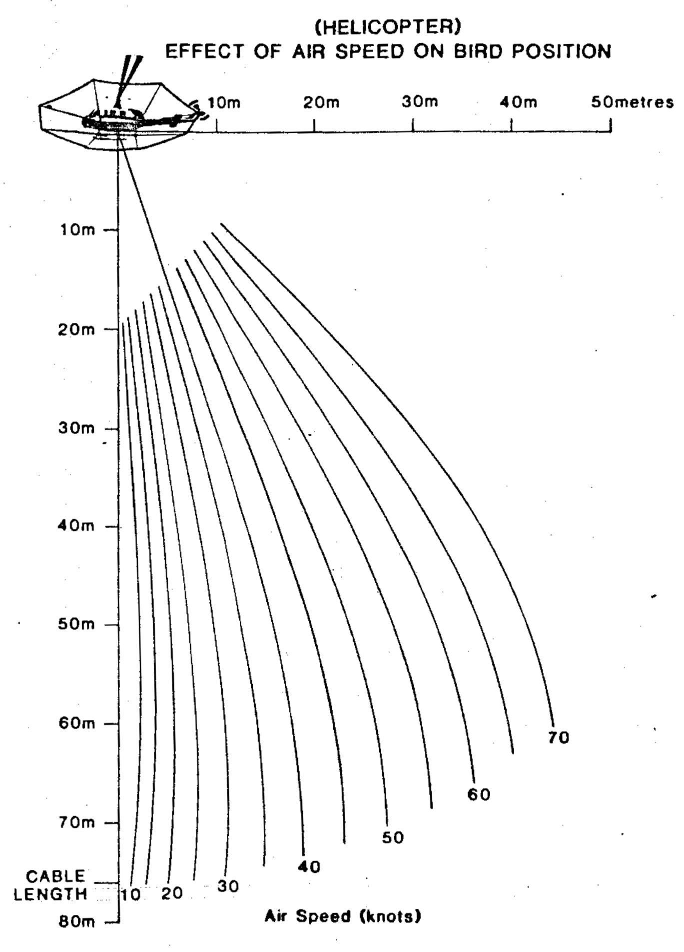


Figure C1

b) The Lag Factor

The bird's spatial position along with the time constant of the system introduces a lag factor (Figure C2) or shift of the response past the actual conductor axis in the direction of the flight line. This is due to fiducial markers being generated and imprinted on the film in real time and then merged with E.M. data which has been delayed due to the two aforementioned parameters. This lag factor necessitates that the receiver response be normalized back to the helicopter's position for the map compilation process. The lag factor can be calculated by considering it in terms of time, plus the elapsed distance of the proposed shift and is given by:us the elapsed distance of the proposed shift and is given by:

$$\text{Lag (seconds)} = \text{time constant} + \frac{\text{bird lag (metres)}}{\text{ground speed (metres/sec)}}$$

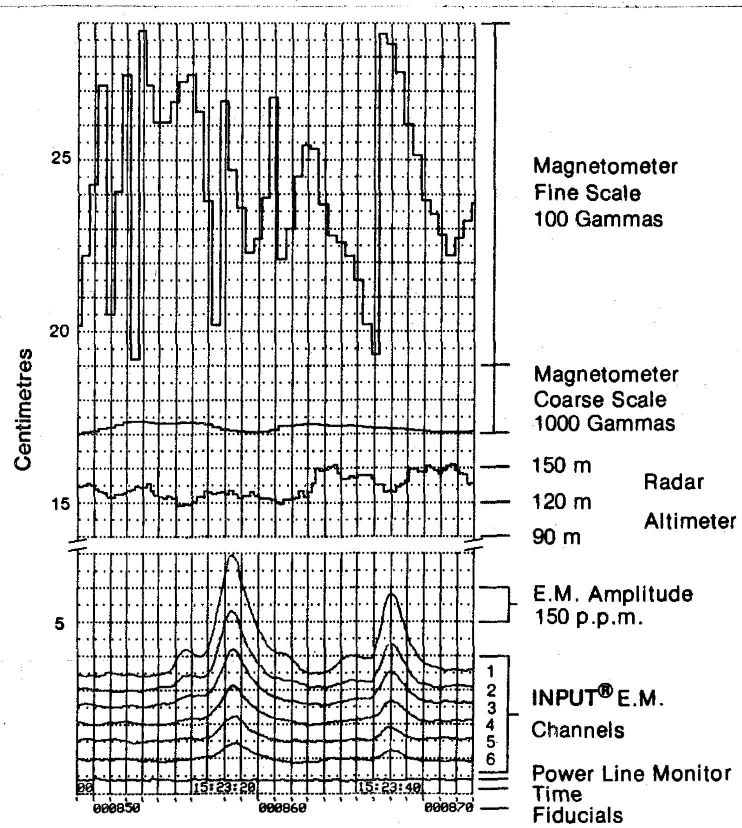


Figure C2

The time constant introduces a 1.3 second lag while, at an aircraft velocity of 40 kt., the 'bird' lag is 1 second. The total lag factor which is to be applied to the INPUT E.M. data at 40 kts. is 2.3 seconds. It must be noted that these two parameters vary within a small range dependent on the helicopter velocity, though they are applied as constants for consistency. As such, the removal of this lag factor will not necessarily position the anomalies in a straight line over the real conductor axis. The offset of a conductor response peak is a function of the system and conductor geometry as well as conductivity.

The magnetic data has a 1.0 second lag factor introduced relative to the real time fiducial positions. This factor is software controlled with the magnetic value recorded relative to the leading edge (left end) of each step 'bar', for both the fine and coarse scales. For example, a magnetic value positioned at fiducial 10.00 on the records would be shifted to fiducial 9.95 along the flight path.

A lag factor of 2 seconds (0.1 fiducial) is introduced to correct 50-60 Hz monitor for the effects of bird position and signal processing. In cases where a 50-60 Hz signal is induced in along formational conductor, a 50-60 Hz secondary electromagnetic transient may be detected as much as 5 km. from the direct source over the conductive horizon.

The altimeter data has no lag introduced as it is recorded in real time relative to the fiducial markings.

c) Calibration

The major advance made during the transition from the INPUT MK V to the INPUT MK VI has been the ability to calibrate the equipment accurately and consistently. Field tests at established test sites are carried out on an average of once every 6 months to check the consistency of the INPUT installations available from QUESTOR.

To calibrate the equipment for a survey operation the following tests are used:

1) "ZERO" the digital and record background E.M. levels;
2) magnetometer scale calibrations;
3) altimeter calibration;
4) calibration of INPUT receiver gain;
5) aircraft compensation;
6) record background E.M. levels at 600 m.;
7) survey flight;
8) record background E.M. levels at 600 m.
9) record full scale INPUT receiver gain;
10) record compensation drift;
11) terminate or repeat from step 4.

This sequence of tests may be repeated in midflight given that the duration of the flight is sufficiently long. Typically, this process is conducted every 2 hours of actual flying time and at the termination of every flight.

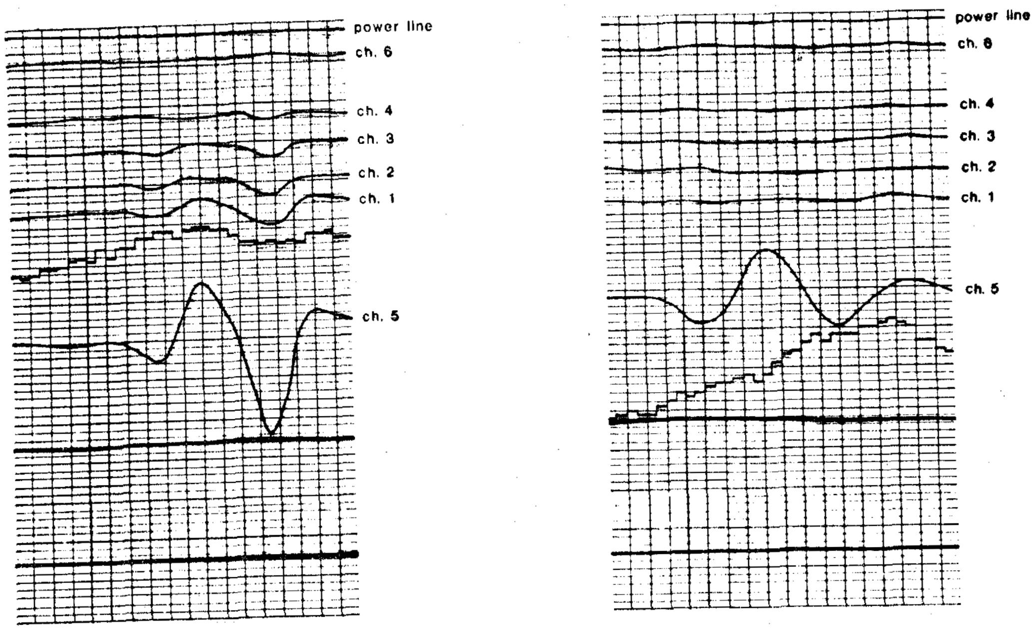
The background levels are recorded and then used to determine the drift that may occur in the E.M. channels during the progression of a survey flight. If drift has occurred, the

E.M. channels are brought back to a levelled position by use of the linear interpolation technique during the data processing.

The primary electromagnetic field generated by the INPUT system induces eddy currents in the frame of the helicopter. This spurious secondary field is a significant source of noise which needs to be taken account of before every survey flight is initiated.

Compensation is the technique by which the effects of this spurious secondary field are eliminated. A reference signal, which is equal in amplitude and waveform but opposite in polarity, is obtained from the primary field voltage in the receiver coil and applied to each channel of the receiver. The compensation signal is not a constant value due to coupling differences induced by 'bird' motion relative to the aircraft. The signal applied is proportional to the inverse cube of the distance between the 'bird' and aircraft. Figure C3 displays the effect of compensation.

Typically, channel 5 is selected for compensation because it is not affected by geological noise due to its sampling location in the transient and then coupling changes are induced by precipitating 'bird' motion. Phase considerations of channel 5, relative to the remaining channels, dictates whether sufficient compensation has been applied. If the remaining channels are in-phase to channel 5 during this procedure, an over-compensated situation is indicated, whereas, out-of-phase would be indicative of an under-compensation case. Normally this adjustment is carried out at an altitude of 600 metres in order to eliminate the influence of external geological and cultural conductors.



Uncompensated   Compensated

Figure C3

The magnetometer, altimeter and INPUT receiver gain are also calibrated at the initiation of every survey flight. With the magnetometer, there are two scales, a coarse and a fine scale. The fine scale indicates a 10 gamma change for a 1 cm. change in amplitude (Figure C2). The coarse scale moves 2 mm. (or 1 division) for a 100 gamma change with full scale,2 cm., indicating a 1000 gamma shift.

The altimeter (Figure C4), is calibrated to indicate 400 feet altitude at the seventh major division (7 cm.), read from the bottom of the analog record. This is the nominal flying height of INPUT surveys, wherever relief and aircraft performance are not limiting factors. The eighth major division correlates with 300 feet while the sixth corresponds with 500 feet in altitude.

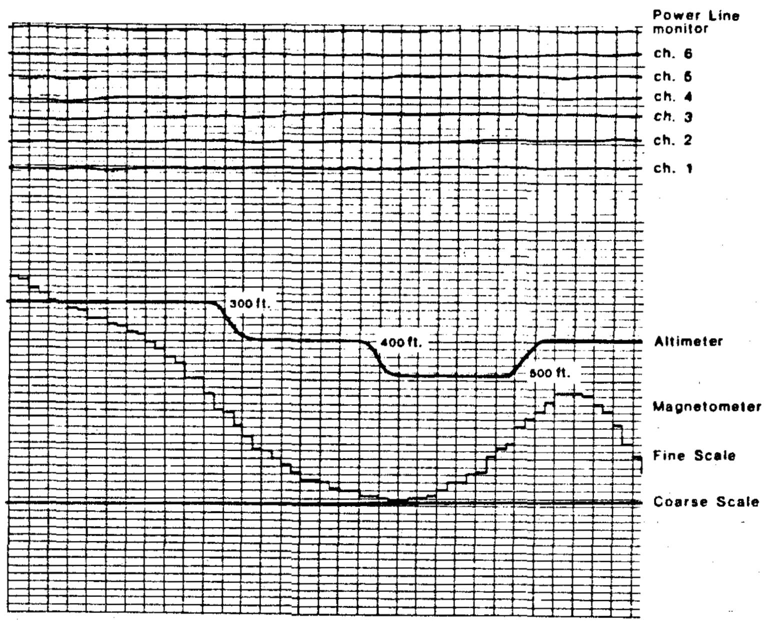


Figure C4

The INPUT receiver gain is expressed in parts per million of the primary field amplitude at the receiver coil. At the 'bird', the primary field strength is 8.5 and 8 volts peak-to-peak, for the vertical and horizontal axis coils respectively or 4.2 and 4.0 volts peak amplitude. The calibration signal introduced at the input stage of the receiver is 4.0 mV. Expressed in parts- per-million, this induces a change of:

$$\frac{4 \times 10\text{-}3 \times 10^{6}}{4.2} = 1{,}000 \text{ ppm (vertical coil)}$$

These calibration signals (Figure C5) cause an 8 cm. deflection of all 6 traces which translates to a sensitivity of 125 ppm/cm. for the vertical axis receiver coil system.

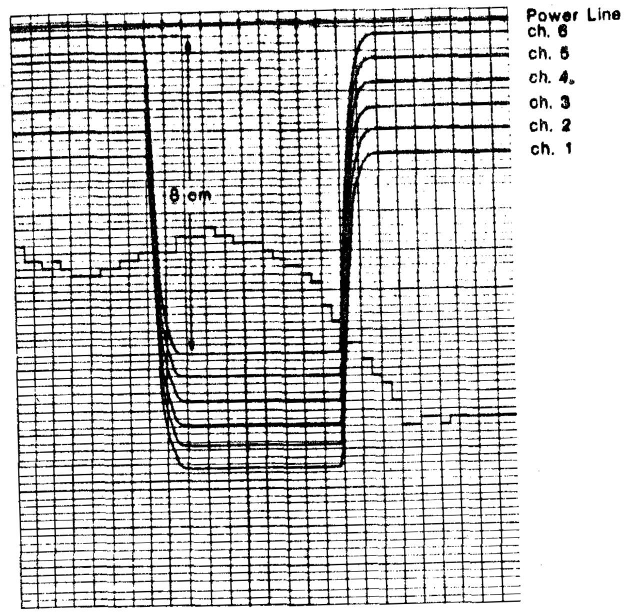


Figure C5

With the chart speed increased from the normal 0.25 cm. to 2.5 cm. per second, the time constant of the system (Figure C6), can be obtained by analysis of the exponential rise of the calibration signal for all 6 traces. The time constant, is defined as the time for the calibrated voltage to build up or decay to 63.2% of its final of initial value. A longer time constant reduces background noise but also has the effect of reducing the amplitude of the signal, especially for near surface responses.

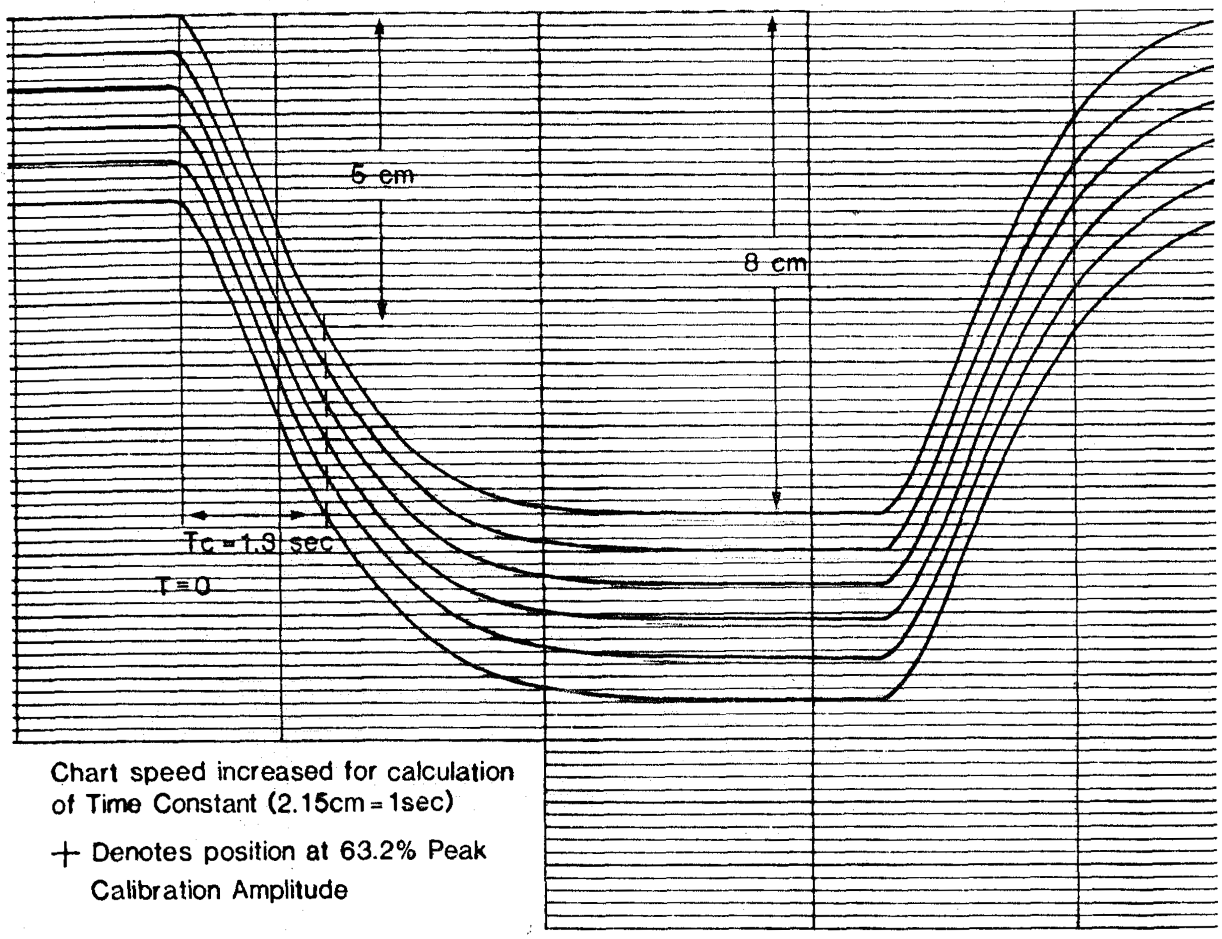


Figure C6

This trade-off indicates the importance of selecting an optimum value for the time constant. Experience and years of testing have indicated that a time constant of 1.3 second does not impede interpretation of bedrock source conductors.

d) Depth Penetration Capabilities

There are many factors which effect the depth of penetration. These factors consist of:

1) altitude of the helicopter above the ground;
2) conductivity contrast between conductor and host rock;
3) size and attitude of conductor;
4) type and conductivity of overburden present.

Of these factors, only the first parameter can be controlled. Typically, a survey altitude of 120 metres (400 feet) or less above the terrain is maintained. At this height, the helicopter INPUT MARK VI system has responded to conductors located at a depth of 200 metres (650 feet) below the surface.

APPENDIX D

INPUT Data Processing

The QUESTOR designed and implemented computer software routines for automatic interactive compilation and presentation, may be applied to all QUESTOR INPUT Systems. The software is compatible with the fixed-wing MARK VI INPUT, and the helicopter MARK VI INPUT. The procedures are all common, however, separate subroutines are accessed which contain the unique parameters to each system. Although many of the routines are standard data manipulations such as error detection, editing and levelling, several innovative routines are also optionally available for the reduction of INPUT data. The flow chart on the following page (Figure D1) illustrates some of the possibilities. Software and procedures are constantly under review to take advantage of new developments and to solve interpretational problems.

a) INPUT Data Entry and Verification

During the data entry stage, the digital data range is compared to the analog records and film. The raw data may be viewed on a high-resolution video graphics screen at any desirable scale. This technique is especially helpful in the identification of background level drift and instrument problems.

b) Levelling Electromagnetic Data

Instrument drift, recognized by viewing compressed data from several hours of survey flying, is corrected by an interactive levelling program. Although only two or three calibration sequences are normally recorded, the QUESTOR technique permits the use of multiple non-anomalous background recordings to divide a possible problematic situation into segments. All 6 INPUT channels are levelled simultaneously, yet independently. The sensitivity of the levelling process is normally better than 10 ppm on data with a peak-to-peak noise level of 30 ppm.

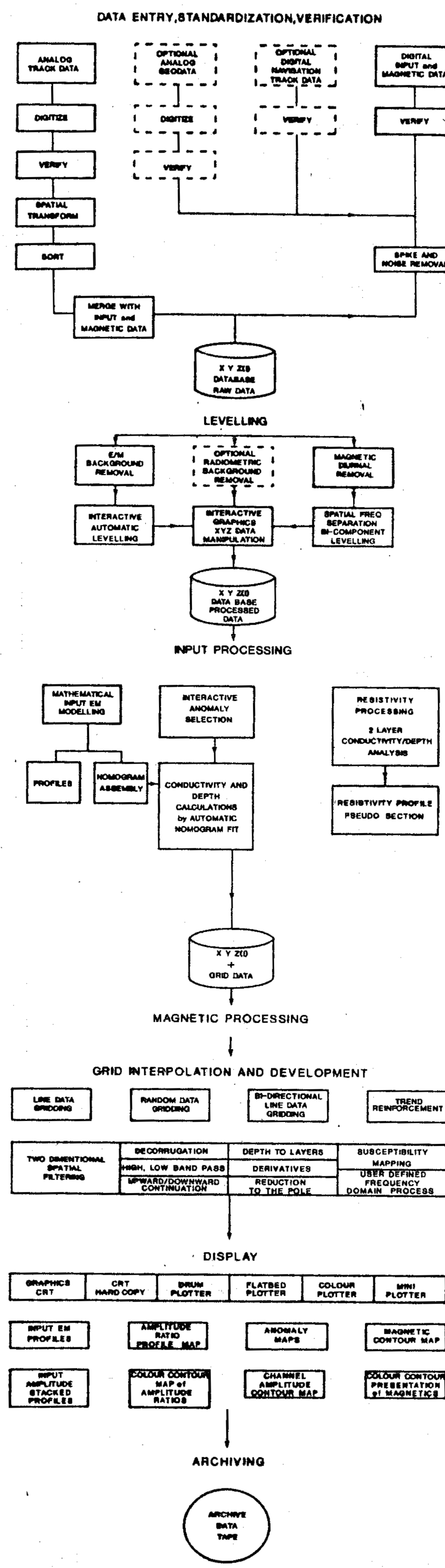
c) Data Enhancement

Normal INPUT processing does not include the filtering of electromagnetic data. The residual high frequency variations often apparent on analog INPUT data, is due almost wholly to "spherics", atmospheric static discharges. In conductive environments, spherics are apparently grounded and effectively filtered. In resistive environments, frequency spectrum analysis and subsequent FFT (Fast Fourier Transform) filters have been applied to data to reduce the noise envelope.

d) Selection of EM Anomalies

The levelled data may be viewed sequentially on a graphics screen for the selection of INPUT anomalies. Anomalies are selected by aligning a cursor to the position of the peaks. Some of the parameters of the response are manually entered during the picking of the response. These include the number of channels above background levels and the type of anomaly, e.g. cultural, bedrock, surficial, up-dip, etc.

QUESTOR INPUT DATA PROCESSING



APPENDIX E

INPUT INTERPRETATION PROCEDURES

The INPUT system is dependent upon a definite resistivity contrast and is most suitable for highly conductive massive sulphides. Differentiation is possible between flat-lying surficial conductors and bedrock conductors.

The selection of anomalies is based on their characteristics and interpretation is sometimes enhanced by analyzing the magnetics. Spherics, due to atmospheric static discharges and lightning storms, are distinguishable from conductive anomalies. In the analysis of each conductor anomaly, the following parameters may be considered: anomaly shape with the conductor pattern, topography, corresponding magnetic features, anomaly decay rate, the number of channels affected, geological environment and strike direction and the interpreted dip relative to structural features.

For each anomaly selected, the following are recorded: location by fiducial, channel amplitudes in parts per million, number of channels, conductivity-thickness in siemens, corresponding magnetic association in gammas, magnetic fiducial location altitude of aircraft above ground in metres and also, the origin of the response (ie. surficial, bedrock, cultural).

Conductive responses are categorized into three main groups. These are bedrock, surficial and cultural.

Bedrock conductors can be sorted into conductive sources which are commonly encountered on INPUT surveys: massive sulphides, graphites, serpentinized peridotites and fault or shear zones. Magnetite and manganese concentrations may also yield INPUT responses in some circumstances. INPUT responses over alkalic intrusives and weathered basic volcanics have been well documented by Macnae (1979) and Palacky (1979).

Massive Sulphides

Massive sulphides occur as both syngenetic and stratified deposits and as vein infilling deposits. Nickel deposits often occur as magmatic injections of massive sulphides. Kuroko-type syngenetic copper-zinc massive sulphides usually occur at an interface of felsic intermediate rocks. In this environment, there are seldom any significant formations of carbonaceous sediments on the same horizon. Often, these deposits are overlain by a silicious zone which may contain stingers of continuous sulphides, which change to disseminated sulphides away from the main deposit. These often give a deposit the appearance of a long strike-length zone which may not fit the explorationist's target model. A careful analysis of conductivities and apparent widths (half-peak-width), will often reveal the geometry and source. Syngenetic deposits of base metal sulphides of up to 2 km strike length are not unknown, although most sizeable deposits have strike lengths between 500 and 1000 m.

The conductivity of most massive sulphide deposits may be attributed to the pyrrhotite and chalcopyrite content, as both minerals form elongated interconnected masses which are most amenable to the induction of electromagnetic secondary fields. Pyrite normally forms cubic crystals which must be interconnected electrically in order to produce a response. Massive pyrite often produces only a moderate response which may be difficult to distinguish from graphite. The in-situ conductivity of massive sulphides, although very high for individual crystals, often falls in the range of 5 to 20 S/m.

Sulphide conductive zones are rare in nature; economic sulphides are even more scarce. Long formational sulphide zones are known, but are not common. More often, sulphide concentrations may occur within formational graphitic zones.

The geometry of many syngenetic and injected sulphide deposits may fall within broad classifications of size, conductivity and magnetization but most of these bodies are anomalous within their local geological environment. There are often changes in dip, conductivity, thickness and magnetization with respect to the regional environment. There are no rules which apply universally to massive sulphide deposits. One observation which has consistently applied to sulphide deposits is that INPUT responses (amplitude and conductivity) are roughly proportional to mineral content.

The INPUT system is capable of detecting disseminated sulphides within zones of resistivity changes. These may have low conductivities and responses will normally be restricted to channels 1 through 4. The response amplitudes will vary with the horizontal and vertical extent of the zone. Gold deposits often fall within this response classification.

The magnetic response of a sulphide deposit is the most deceiving information available to the explorationist. Although many large economic deposits have a strong direct magnetic association, some of the largest base metal deposits have no magnetic association. An isolated magnetic anomaly caused by oxidation conditions at a volcanic vent flanking a conductor, may have more significance than a body which has a uniform magnetic anomaly along its strike length. Differing geochemical environments often results in the zoning of minerals so that non-homogeneous conductivities and magnetic responses may be favourable parameters.

Graphitic Carbonaceous Conductors

Carbonaceous sediments are usually found within the sedimentary facies of Precambrian and Proterozoic greenstone belts. These represent a low energy, sedimentary environment with good bedding planes and little or no structural deformation. Graphites are often located in basins of the sub-aqueous environment, producing the same body shape as sulphide concentrations. Most often however, they form long, homogeneous planar sequences. These may have thicknesses from a metre to hundreds of metres. The recognition of graphites in this setting is normally straightforward.

Conductivities and apparent widths may be very consistent along strike. Strike lengths of tens of kilometres are common for individual horizons.

The conductivity of a graphite unit is a function of two variables:

a) the quality and quantity of the graphite and

b) the presence of pyrrhotite as an accessory conductive mineral

Pyrite is the most common sulphide mineral which occurs within carbonaceous beds. It does not contribute significantly to the overall conductivity as it will normally be found as disseminated crystals. Greenschist facies metamorphosis will often be sufficient to convert carbonaceous sediments to graphitic beds. Likewise, pyrite will often be transformed to pyrrhotite.

Without pyrrhotite, most graphitic conductors have less than 20 S conductivity-thickness value as detected by the INPUT system or 1 to 10 S/m conductivity from ground geophysical measurements. With pyrrhotite content, there may be little difference from sulphide conductors.

It is not unusual to find local concentrations of sulphides within graphitic sediments. These may be recognized by local increases in apparent width, conductivity or as a conductor offset from the main linear trends.

Graphite has also been noted in fault and shear zones which may cross geological formations at oblique angles.

Serpentinized Peridotites

Serpentinized peridotites are very distinguishable from other anomalies. Their conductivity is low and is caused partially by magnetite. They have a fast decay rates, large amplitudes and strong magnetic correlation.

Magnetite

INPUT anomalies over massive magnetites correlate to the total Fe content. Below 25-30% Fe, little or no response is obtained. However, as the Fe percentage increses, strong anomalies result with a distinguished rate of decay that usually is more pronounced than those for massive sulphides.

Contact zones are often predicted when anomaly trends coincide with lines of maximum gradient along a flanking magnetic anomaly.

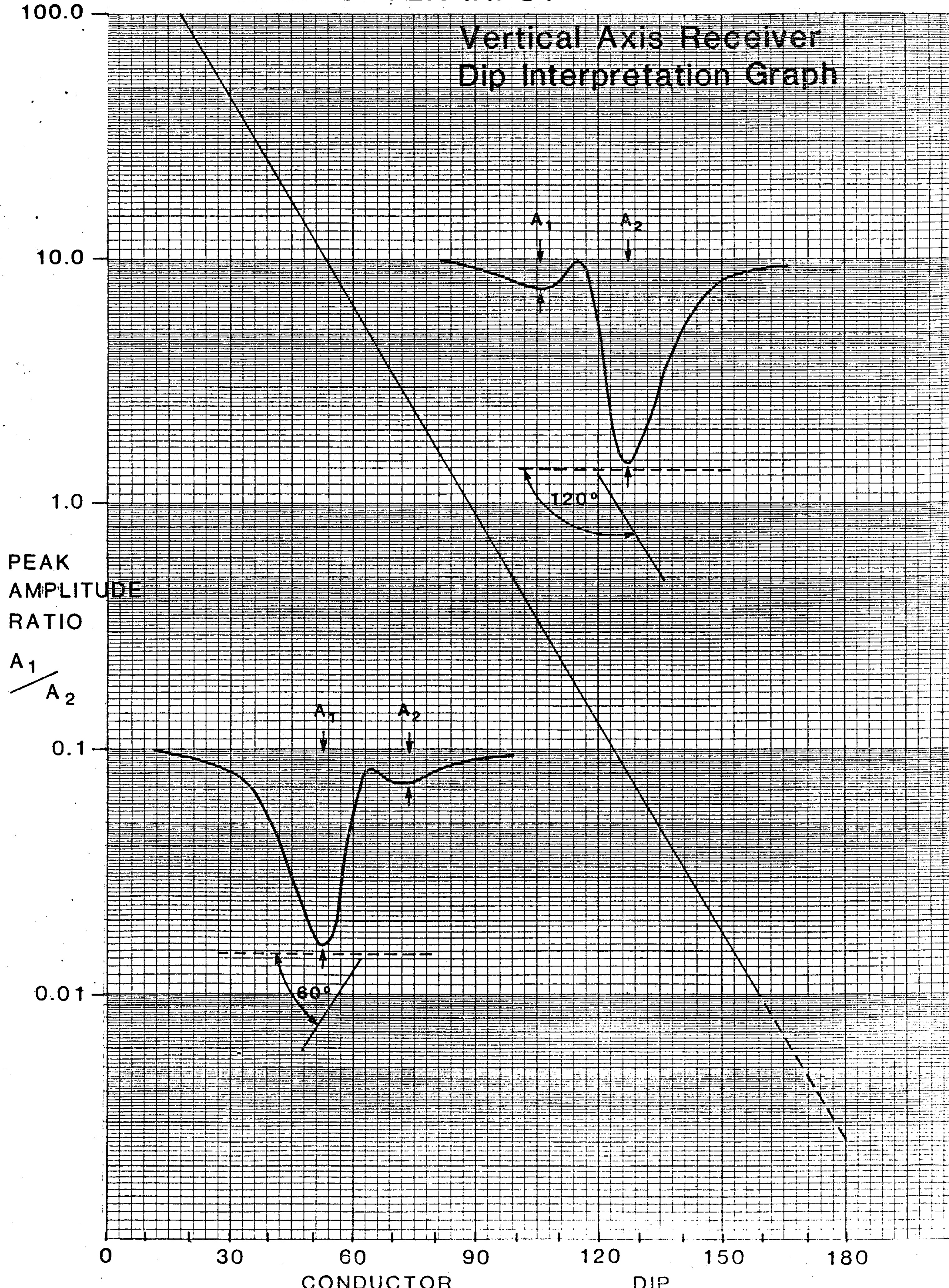
Surficial Conductors

Surficial conductors are characterized by fast decay rates and usually have a conductivity-thickness of 1-5 siemens. These values will be much higher in saline conditions. Overburden responses are broad, more so than bedrock conductors. Anomalies due to surficial conductivity are not dependent on flight direction. In profile form, surficial responses are symmetrical from line-to-line with the Helicopter INPUT system, and are characterized by a single response rather than a double peak for dipping and vertical conductors. Conductive deposits such as clay beds, may lie in valleys which can be checked on the altimeter trace and with the base maps topography.

Cultural Conductors

Cultural conductors are identifiable by examining the power line monitor and the film to locate railway tracks, power lines, buidings, fences or pipe lines. Power lines produce INPUT anomalies of high conductivity that are similar to bedrock responses. The strength of cultural anomalies is dependent on the grounding of the source. INPUT anomalies usually lag the power line monitor by 1 second, which should be consistent from line-to-line. If this distance between the INPUT response and the power line monitor differs between lines, then there is the possibility of an additional conductor present. The amplitude and conductivity-thickness of anomalies should be relatively consistent from line-to-line.

HELICOPTER INPUT



JOB NO:26HOP

INPUT EM		ANOMALY		PEAK	RESPONSE	AMPLITUDES		(PPM)		TCP	ALT	MAGNETIC	
LINE	FIDUCIAL	TYPE	CHS	CH1	CH2	CH3	CH4	CH5	CH6	(S)	(M)	FIDUCIAL	VALUE
29020A	277.499		1	30	-	-	-	-	-	NC	135	-	
20402A	64.310		5	189	118	71	32	14	-	17	146	-	
20402B	65.105		3	63	51	33	-	-	-	27	128	-	
20412A	22.697	S	1	30	-	-	-	-	-	NC	160	-	
20422G	370.352	S	1	30	-	-	-	-	-	NC	133	-	
20422H	370.819		2	45	23	-	-	-	-	NC	113	370.85	135
20430J	319.003	S	1	30	-	-	-	-	-	NC	121	-	
20450L	239.701		3	142	56	23	-	-	-	8	141	-	
20450M	241.046	S	1	30	-	-	-	-	-	NC	117	-	
20451A	247.055		3	88	33	11	-	-	-	6	147	-	
20462A	211.651		2	105	49	-	-	-	-	NC	145	-	
20462B	215.798	S	2	39	15	-	-	-	-	NC	126	-	
20462C	216.589		3	161	66	22	-	-	-	6	136	-	
20470J	159.931		5	850	393	175	74	28	-	10	113	-	
20470K	161.201	S	2	50	25	-	-	-	-	NC	113	-	
20471A	167.227		2	87	41	-	-	-	-	NC	154	-	
20485A	138.295	S	2	49	23	-	-	-	-	NC	145	-	
20485B	138.849	S	2	87	38	-	-	-	-	NC	127	138.77	196
20485C	139.787		4	359	150	62	22	-	-	8	113	-	
20490K	74.398		3	205	89	29	-	-	-	6	119	-	
20490L	74.854	S	2	136	45	-	-	-	-	NC	129	-	
20490M	75.349	S	2	104	33	-	-	-	-	NC	128	-	
20503A	46.600		1	30	-	-	-	-	-	NC	142	-	
20503B	48.498		1	30	-	-	-	-	-	NC	138	-	
20503C	48.898		1	30	-	-	-	-	-	NC	126	-	
20503D	50.424		6	789	484	271	127	61	29	17	130	-	
20503E	50.849		2	282	125	-	-	-	-	NC	116	51.08	225

JOB NO:26HOP

INPUT EM LINE	INPUT EM FIDUCIAL	ANOMALY TYPE	ANOMALY CHS	PEAK RESPONSE AMPLITUDES (PPM) CH1	CH2	CH3	CH4	CH5	CH6	TCP (S)	ALT (M)	MAGNETIC FIDUCIAL	MAGNETIC VALUE
20510L	355.899		2	251	118	-	-	-	-	NC	123	-	
20510M	356.502		6	1041	588	290	127	46	13	12	113	-	
20510N	357.066		3	193	80	25	-	-	-	5	94	-	
20510P	358.802		1	30	-	-	-	-	-	NC	124	-	
20510R	359.100		1	30	-	-	-	-	-	NC	142	-	
20521E	329.874		6	577	261	105	46	14	11	10	128	-	
20521F	330.349		6	1457	921	550	303	165	86	24	124	-	
20521G	330.829		6	916	528	305	171	109	62	25	117	-	
20531J	277.888		6	899	530	303	165	97	58	23	122	-	
20531K	278.208		6	726	450	270	164	90	57	29	141	-	
20531L	278.692		6	753	381	186	88	45	21	14	143	278.88	128
20531M	279.979		3	76	36	17	-	-	-	10	124	280.00	129
20531N	280.651		1	30	-	-	-	-	-	NC	146	-	
20542C	248.112		2	30	15	-	-	-	-	NC	135	-	
20542D	248.924		2	38	21	-	-	-	-	NC	134	249.20	36
20542E	249.577		4	87	44	17	17	-	-	11	109	249.77	95
20542F	250.271		6	2533	1357	663	298	135	59	13	109	-	
20542G	250.851		6	902	516	285	138	67	38	18	117	-	
20542H	251.218		6	743	438	260	140	69	36	22	133	-	
20552F	197.644		6	769	473	257	138	74	41	20	119	-	
20552G	198.119		6	2755	1596	858	415	199	87	16	109	-	
20552H	198.309		6	2853	1430	658	267	111	38	11	120	-	
20552J	198.950		3	108	37	7	-	-	-	3	123	-	
20552K	200.952		1	30	-	-	-	-	-	NC	114	-	
20562A	164.196		1	30	-	-	-	-	-	NC	137	-	
20562B	165.093		1	40	-	-	-	-	-	NC	126	-	
20562C	165.896		2	80	33	-	-	-	-	NC	144	-	
20563A	167.932		6	635	376	216	120	71	42	24	134	-	
20570T	113.127		6	591	283	137	60	29	20	14	148	-	
20570W	113.398		4	336	131	41	8	-	-	5	143	113.55	29
20570Y	113.802		2	71	15	-	-	-	-	NC	140	-	
20582A	81.104		2	88	22	-	-	-	-	NC	140	81.20	21
20582B	81.794		5	434	213	102	41	12	-	10	145	-	

JOB NO:26HOP

INPUT EM LINE	FIDUCIAL	ANOMALY TYPE	CHS	PEAK CH1	RESPONSE CH2	CH3	AMPLITUDES CH4	CH5	(PPM) CH6	TCP (S)	ALT (M)	MAGNETIC FIDUCIAL	VALUE
20591D	35.907		5	506	235	103	36	13	-	9	147	36.00	6
20591E	36.378		3	442	124	31	-	-	-	4	132	36.88	66
20601A	311.626		6	836	411	183	80	34	16	12	146	-	
20601B	311.992		6	1465	742	335	122	47	13	10	128	-	
20601C	312.286		6	1078	572	301	142	63	26	15	122	-	
20611F	266.643		6	1111	597	296	124	55	28	13	143	-	
20611G	266.919		6	1106	651	366	184	97	42	19	147	-	
20611H	267.269		6	1097	511	216	63	17	5	8	122	267.55	10
20611J	268.348		1	30	-	-	-	-	-	NC	113	-	
20611K	269.349		1	30	-	-	-	-	-	NC	123	269.80	16
20621A	238.450		3	111	55	20	-	-	-	7	144	238.13	9
20622A	239.862		6	436	223	108	48	23	13	14	135	-	
20622B	240.165		6	488	247	132	58	29	11	15	113	240.13	6

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JOB NO: 26HOP

LINE	29020,	FID RANGE=	275.960	278.371
LINE	20384,	FID RANGE=	141.768	142.211
LINE	20391,	FID RANGE=	94.136	95.000
LINE	20392,	FID RANGE=	96.100	96.698
LINE	20402,	FID RANGE=	63.266	65.446
LINE	20411,	FID RANGE=	19.791	21.000
LINE	20412,	FID RANGE=	22.000	24.197
LINE	20422,	FID RANGE=	367.370	370.927
LINE	20430,	FID RANGE=	317.242	319.500
LINE	20431,	FID RANGE=	320.600	323.259
LINE	20442,	FID RANGE=	288.724	293.652
LINE	20450,	FID RANGE=	239.495	242.500
LINE	20451,	FID RANGE=	242.600	247.535
LINE	20462,	FID RANGE=	210.866	217.118
LINE	20470,	FID RANGE=	159.912	161.300
LINE	20471,	FID RANGE=	162.600	168.122
LINE	20485,	FID RANGE=	133.738	140.081
LINE	20490,	FID RANGE=	74.166	81.461
LINE	20503,	FID RANGE=	46.242	51.093
LINE	20510,	FID RANGE=	355.718	361.319
LINE	20521,	FID RANGE=	326.791	331.133
LINE	20531,	FID RANGE=	277.716	281.989
LINE	20542,	FID RANGE=	247.435	251.348
LINE	20552,	FID RANGE=	197.442	201.444
LINE	20562,	FID RANGE=	162.940	162.995
LINE	20562,	FID RANGE=	163.577	167.000
LINE	20563,	FID RANGE=	167.600	167.975
LINE	20570,	FID RANGE=	112.255	116.720
LINE	20570,	FID RANGE=	116.818	117.499
LINE	20582,	FID RANGE=	78.384	82.777
LINE	20591,	FID RANGE=	34.702	40.218
LINE	20601,	FID RANGE=	308.633	312.865
LINE	20611,	FID RANGE=	266.349	271.206
LINE	20621,	FID RANGE=	235.036	238.800
LINE	20622,	FID RANGE=	239.800	240.274

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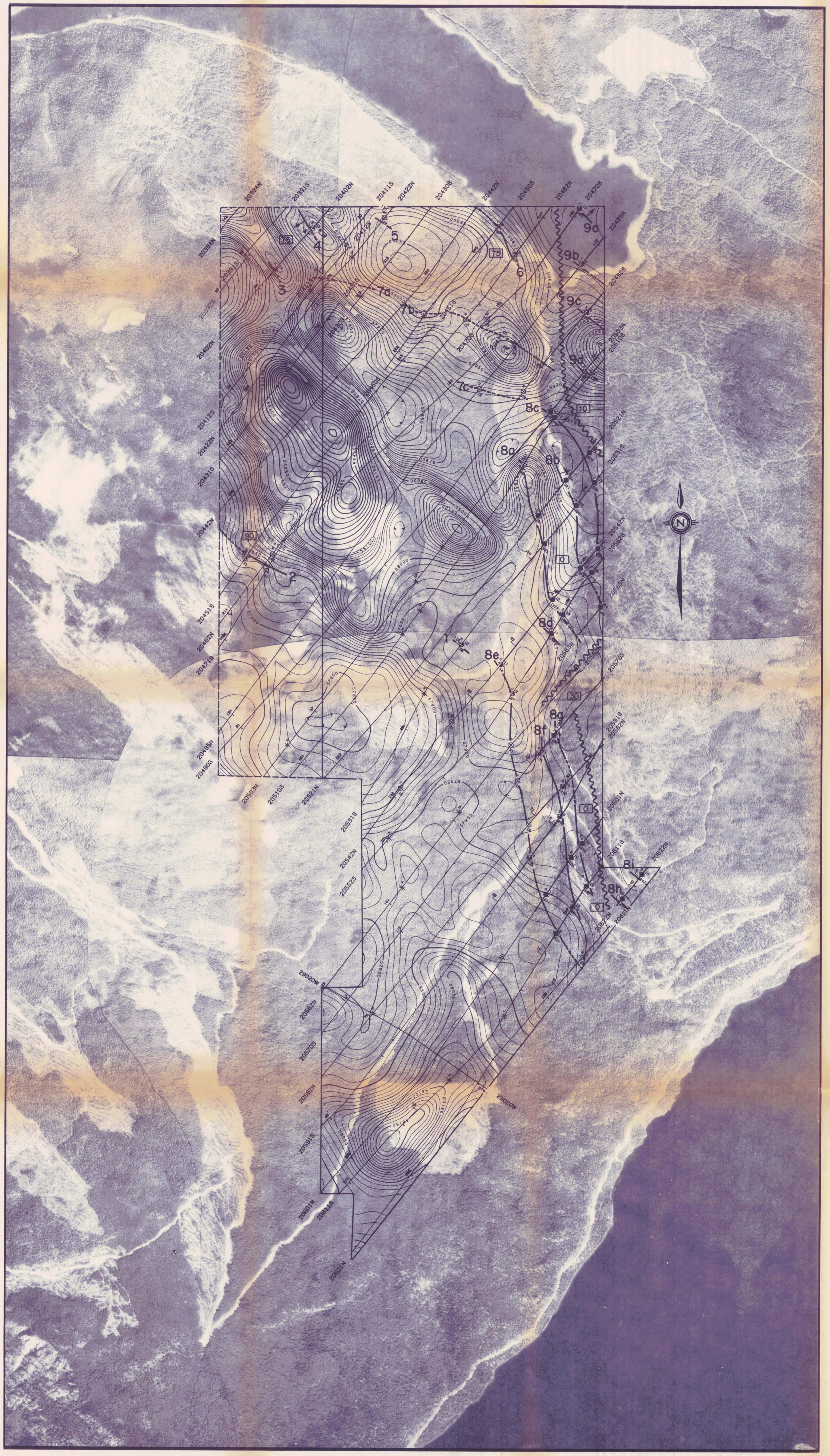
LINE NO.	FIDUCIAL	MAP	UTM CO-ORDINATES EASTING	NORTHING
20591	35.8	2	101509.	126655.
20591	37.2	2	100503.	126738.
20591	38.8	2	99597.	126829.
20591	39.6	2	99089.	126879.
20601	308.8	2	98616.	126689.
20601	309.8	2	99468.	126541.
20601	312.0	2	101248.	126456.
20611	266.7	2	101101.	126275.
20611	268.6	2	99967.	126289.
20611	269.4	2	99541.	126376.
20611	270.2	2	99025.	126516.
20611	271.2	2	98547.	126599.
20621	236.2	2	99037.	126248.
20621	236.6	2	99390.	126208.
20621	237.3	2	99836.	126199.
20621	238.8	2	100987.	126001.
20622	239.8	2	101134.	126033.
20622	240.0	2	101306.	126006.

LINE NO.	FIDUCIAL	MAP	UTM CO-ORDINATES EASTING	NORTHING
20470	160.6	2	104345.	128703.
20470	161.3	2	103906.	128816.
20471	162.6	2	103760.	128694.
20471	163.7	2	102998.	128902.
20471	166.9	2	102018.	129178.
20471	167.9	2	101318.	129167.
20485	134.1	2	100918.	128863.
20485	137.2	2	102897.	128708.
20485	138.7	2	103792.	128564.
20485	139.4	2	104307.	128501.
20490	75.0	2	103888.	128332.
20490	76.0	2	103324.	128372.
20490	76.7	2	102848.	128421.
20503	50.0	2	103328.	128172.
20510	356.7	2	103531.	128094.
20510	357.4	2	103010.	128086.
20510	359.9	2	101388.	128230.
20521	326.8	2	100830.	128126.
20521	327.5	2	101417.	128020.
20521	330.2	2	103269.	127806.
20531	278.4	2	103119.	127663.
20531	279.4	2	102398.	127779.
20531	280.6	2	101689.	127859.
20531	281.2	2	101230.	127826.
20542	248.7	2	101414.	127630.
20542	249.4	2	101943.	127543.
20542	250.3	2	102646.	127454.
20552	197.8	2	102820.	127345.
20552	198.6	2	102206.	127348.
20552	199.4	2	101631.	127374.
20552	200.1	2	101179.	127475.
20562	165.9	2	101664.	127186.
20562	167.0	2	102323.	127058.
20563	167.6	2	102523.	127188.
20570	112.4	2	102276.	126912.
20570	113.4	2	101713.	127000.
20582	80.4	2	100773.	126889.
20582	81.3	2	101422.	126789.

LINE NO.	FIDUCIAL	MAP	UTM CO-ORDINATES EASTING	NORTHING
29020	276.8	2	99680.	126753.
20384	142.0	2	103621.	130609.
20391	95.0	2	103490.	130397.
20392	96.1	2	103503.	130372.
20402	64.5	2	103618.	130155.
20402	65.2	2	103915.	130095.
20411	20.4	2	103920.	129879.
20411	21.0	2	103655.	129921.
20412	22.0	2	103897.	129833.
20412	22.5	2	103637.	129878.
20422	367.6	2	102563.	129911.
20422	369.9	2	103602.	129831.
20422	370.4	2	103872.	129773.
20422	370.8	2	104168.	129735.
20430	317.6	2	104159.	129530.
20430	318.2	2	103849.	129569.
20430	319.5	2	103541.	129607.
20431	320.6	2	103542.	129693.
20431	322.8	2	102475.	129793.
20442	291.0	2	103123.	129448.
20442	292.9	2	103940.	129291.
20442	293.6	2	104531.	129253.
20450	239.8	2	104448.	129068.
20450	240.7	2	103868.	129159.
20450	242.5	2	103335.	129203.
20451	242.6	2	103754.	129077.
20451	243.2	2	103298.	129164.
20451	246.6	2	102078.	129321.
20451	247.5	2	101498.	129350.
20462	211.0	2	101417.	129244.
20462	211.5	2	101815.	129205.
20462	212.0	2	102114.	129176.
20462	214.9	2	103432.	128997.
20462	215.8	2	103894.	128920.
20462	216.1	2	104092.	128893.
20462	216.6	2	104441.	128869.



GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,401

PART 1 OF 2

INPUT® PEAK RESPONSE SYMBOLS 2ms PULSE

SURFICIAL RESPONSE	UP-DIP PEAK RESPONSE	BEDROCK RESPONSE	DECAY INTERVAL CLASSIFICATION
			1 Channel (300 microseconds)
			2 Channel (500 microseconds)
			3 Channel (800 microseconds)
			4 Channel (1200 microseconds)
			5 Channel (1700 microseconds)
			6 Channel (2300 microseconds)

Culture Response

50 Associated Magnetic Response

Anomaly Letter — B 5 1800 — Apparent Conductivity-Width (siemens) (N.C. - No Calculation); Poorly Defined Response; Ch. 2 Amplitude (p.p.m.)

MAGNETIC CONTOURS

10 Gamma Contour Line

50 Gamma Contour Line

250 Gamma Contour Line

Magnetic Depression

1 Gamma = 1 Nanotesla in SI Units

INTERPRETATION

20 Conductor Axis, with reference number good definition)

20 Conductor Axis, with reference number (poor definition)

Vertical Conductor

50° Conductor Dip (magnitude and direction known)

Conductor Dip (direction known)

75 Conductor Depth, below surface in metres

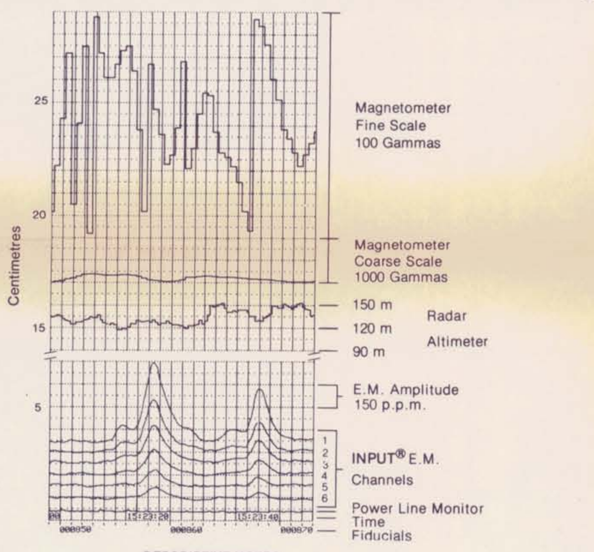
20 Selected Zone, with reference number

Conductive Zone

Fault Zone

A Channel 1 Half-Peak Width

Representative INPUT® Magnetometer and Altimeter Recording



DESCRIPTIVE NOTES

The aircraft is equipped with the Barringer/Questor Mark VI INPUT® airborne E.M. System and the Geometrics G-803 Proton Precession Magnetometer and Sonotek SDS-1200 Series Data Acquisition System. The INPUT® system will respond to conductive overburden and near-surface horizontal conducting layers in addition to bedrock conductors. Discrimination of conductors is based on the rate of transient decay, magnetic correlation and the anomaly shape, together with the conductor pattern and topography.

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INTERPRETATION REFERENCES

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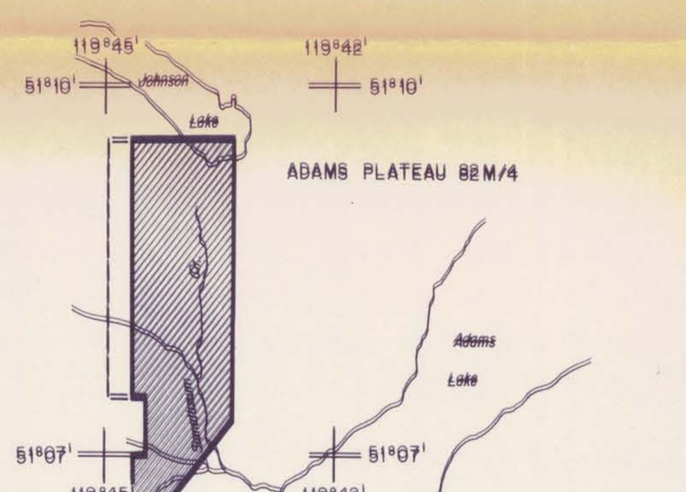

1000 0 3000 Ft

200 0 1000 M

Scale Approx. 1 : 10000

HELICOPTER MK VI INPUT® SURVEY
TOTAL MAGNETIC INTENSITY SURVEY

OMNI RESOURCES INC.

ADAMS PLATEAU

Province of BRITISH COLUMBIA

FILE NO.	SHEET NO.	DATE	COMPILED BY
26HOP	1 of 1	June 1984	Questor Surveys Limited

Questor Surveys Limited
Mississauga Ontario Canada