

84-#367-12184

PAN ISLAND RESOURCE CORPORATION 4/85
GEOPHYSICAL REPORT
On An
AIRBORNE VLF-ELECTROMAGNETOMETER
And MAGNETOMETER SURVEY
MIDAS PROJECT VICTORIA M.D.
Lat. $48^{\circ}36'N$ Long. $124^{\circ}17'W$
NTS 92C/9

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Geophysicist
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Consulting Geophysicist
DATE OF WORK: Mar.7-Mar.16, 1984
DATE OF REPORT: May 29, 1984

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

12,184



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INTRODUCTION

Pan Island Resource Corporation, in conjunction with other companies, commissioned Western Geophysical Aero Data Ltd. to conduct an airborne magnetometer and VLF-electromagnetometer survey in the Port Renfrew - Jordan River area on Vancouver Island. The intention of the survey was two-fold. Firstly, a magnetic intensity contour map was required to assist the regional geological interpretation of the area. Secondly, localized magnetic and VLF-electromagnetic anomalies can provide direction for ground-followup exploration.

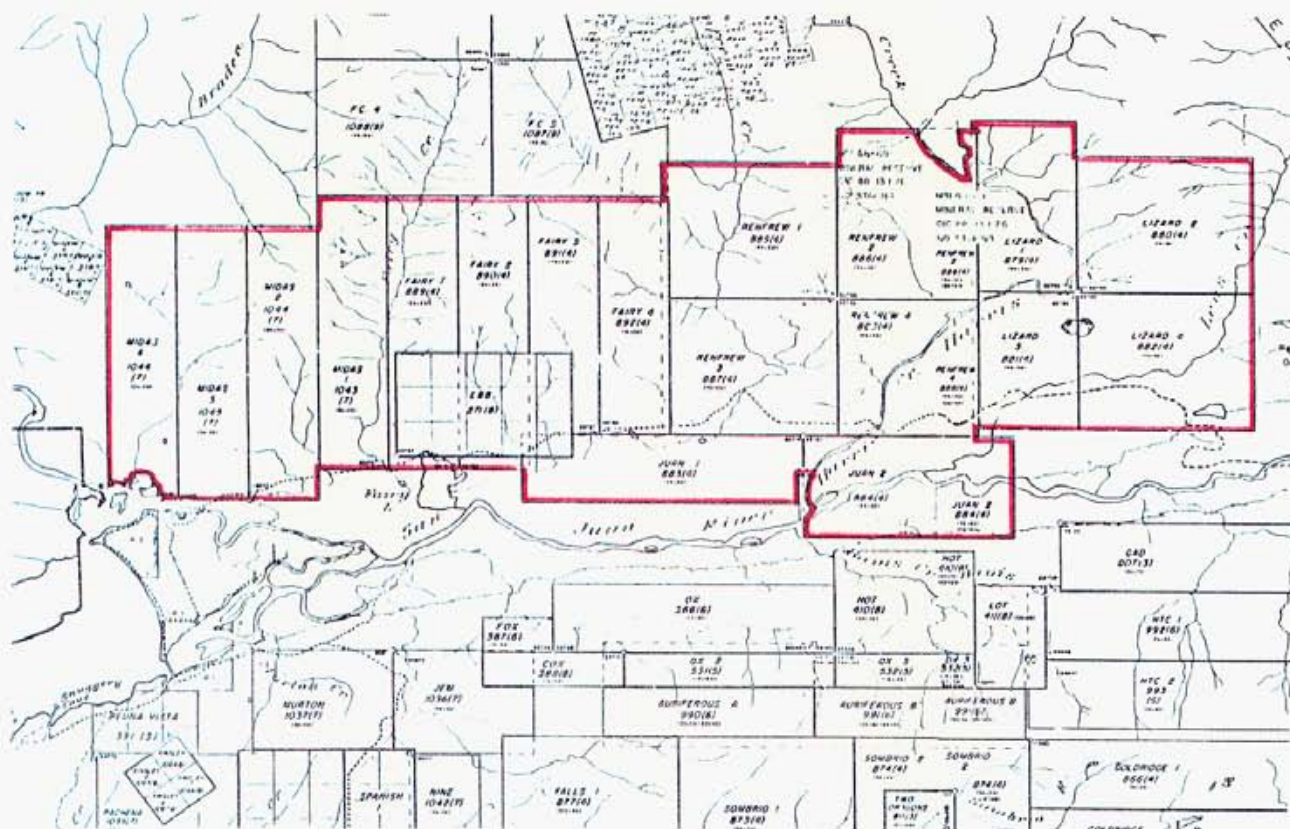
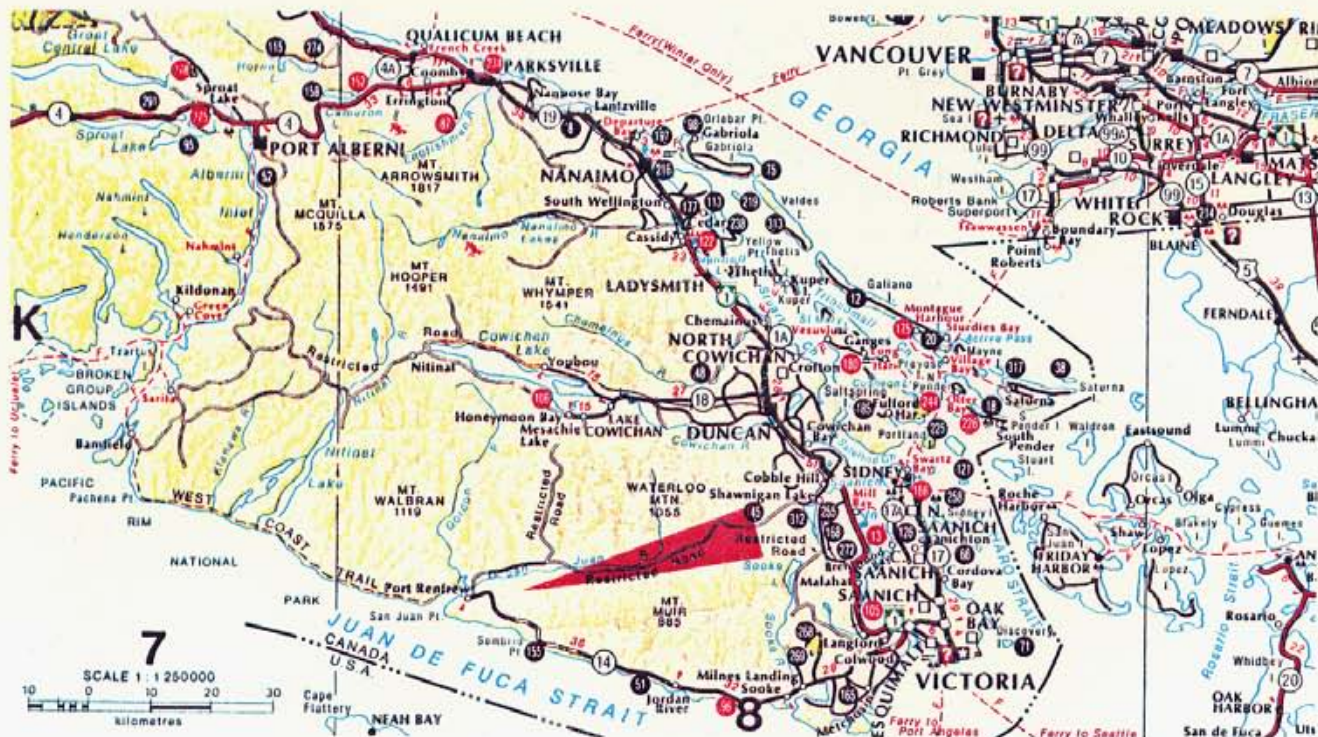
The survey was flown from March 7, 1984 to March 16, 1984 inclusive and approximately 300 line kilometers were required to evaluate the claims held by Pan Island Resource Corporation.

PROPERTY

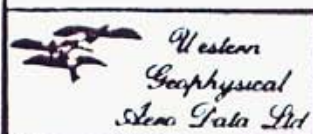
The claims held by Pan Island Resource Corporation are comprised of 301 units as listed below and illustrated on Figure 1.

<u>CLAIM NAME</u>	<u>TAG NO.</u>	<u>RECORD #</u>	<u>NO. UNITS</u>	<u>ANNIV.DATES</u>
LIZARD 1	88793	879	15	11 April 1984
LIZARD 2	88794	880	20	11 April 1984
LIZARD 3	88795	881	12	11 April 1984
LIZARD 4	88796	882	20	11 April 1984
JUAN 1	88779	883	16	11 April 1984
JUAN 2	88780	884	18	11 April 1984





PAN ISLAND RESOURCE CORP.
— MIDAS PROJECT —
LOCATION AND CLAIMS MAP



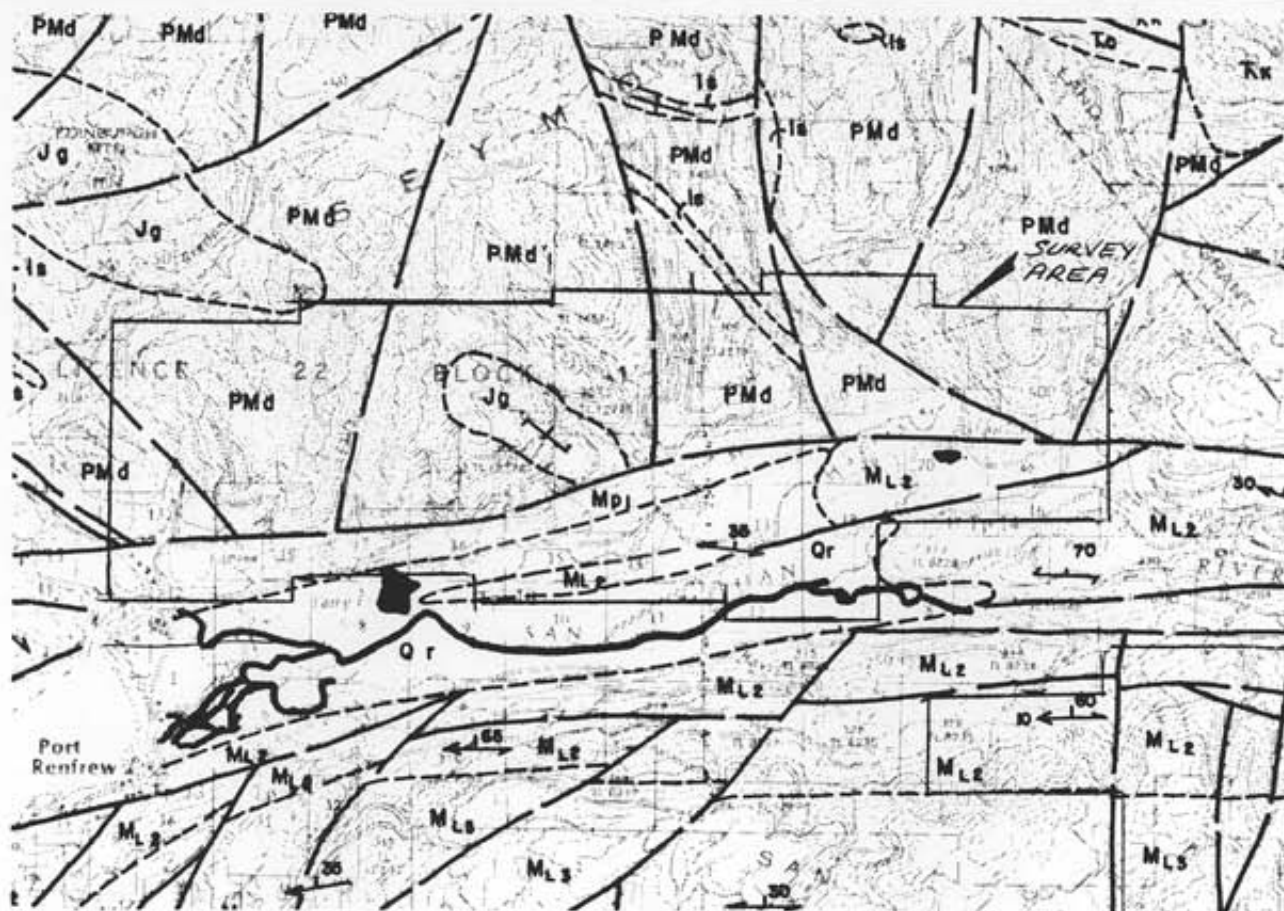
<u>CLAIM NAME</u>	<u>TAG NO.</u>	<u>RECORD #</u>	<u>NO. UNITS</u>	<u>ANNIV.DATES</u>
RENFREW 1	88789	885	20	11 April 1984
RENFREW 2	88790	886	20	11 April 1984
RENFREW 3	88791	887	20	11 April 1984
RENFREW 4	88792	888	16	11 April 1984
FAIRY 1	88781	889	16	11 April 1984
FAIRY 2	88782	890	16	11 April 1984
FAIRY 3	88787	891	14	11 April 1984
FAIRY 4	88788	892	14	11 April 1984
MIDAS 1	89078	1043	16	19 July 1984
MIDAS 2	89077	1044	16	19 July 1984
MIDAS 3	89079	1045	16	19 July 1984
MIDAS 4	89080	1046	<u>16</u>	19 July 1984
			301 Units	

LOCATION AND ACCESS

The claims are located immediately north of the San Juan River and north and east of Port Renfrew. The claims are located in the Victoria Mining Division and NTS 92C/9. Approximate geographical co-ordinates of the area are latitude $48^{\circ}35'N$ to $48^{\circ}37'N$ and longitude $124^{\circ}11'W$ to $124^{\circ}23'W$. (Figure 1)

An all weather road which runs parallel to and north of the San Juan River provides access to the claim group from the towns of Port Renfrew and Shawnigan Lake. Numerous logging roads provide direct vehicle access to much of the claim as illustrated on the photomosaic maps used to present the geophysical data.





LEGEND:

QUATERNARY

- Qr Unconsolidated sediments

TRIASSIC TO CRETACEOUS

LEECH RIVER FORMATION

- ML3 METAGREYWACKE-SCHIST UNIT: metagreywacke, meta-arkose, quartz-feldspar-(garnet-) biotite schist
- ML2 ARGILLITE-METAGREYWACKE UNIT: thinly bedded greywacke and argillite, slate, phyllite, quartz-biotite schist
- ML1 CHERT-ARGILLITE-VOLCANIC UNIT: ribbon chert, cherty argillite, metarhyolite, metabasalt, chlorite schist

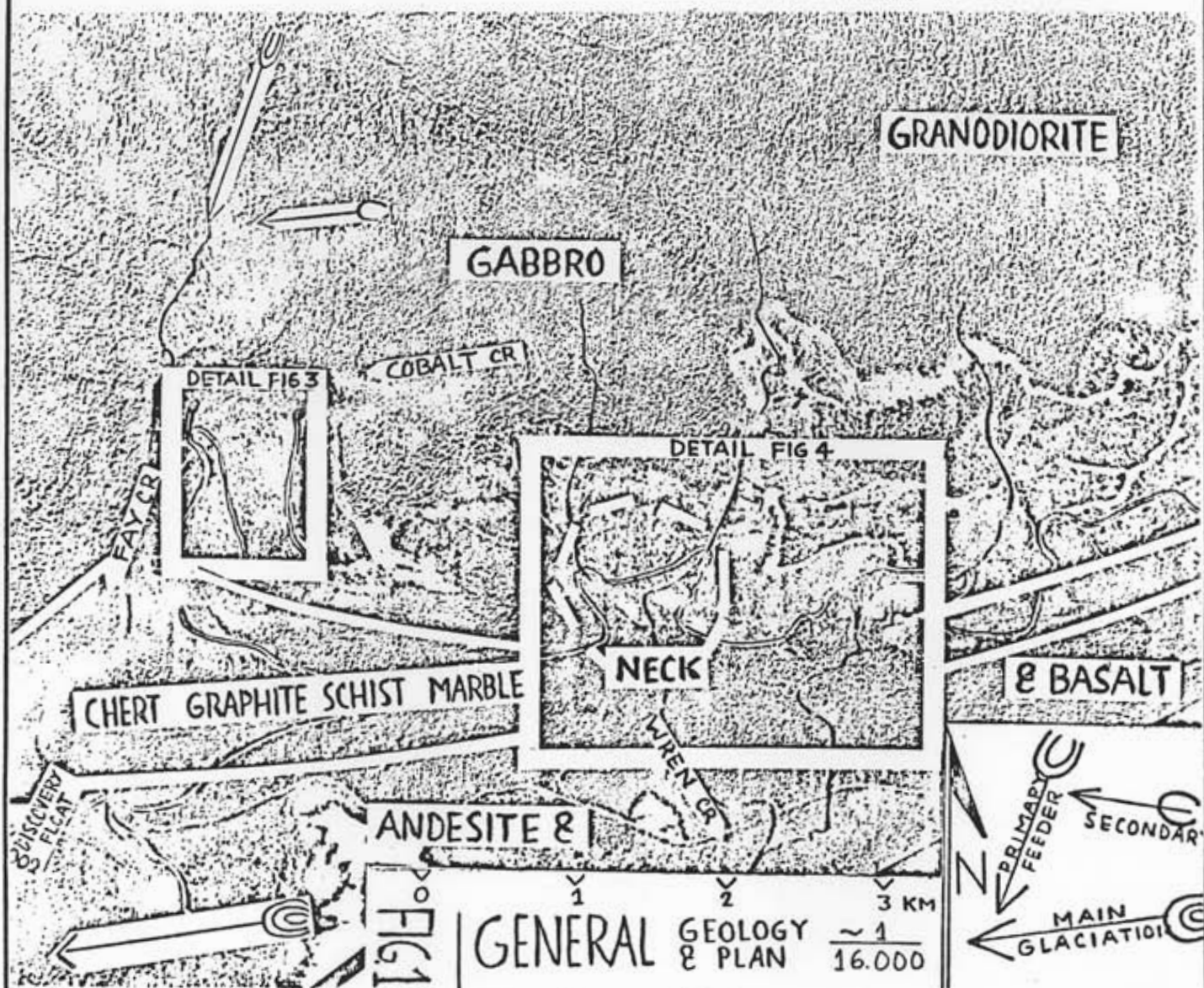
PACIFIC RIM COMPLEX

- Mpj ARGILLITE-METASILTSTONE UNIT: metasiltstone, argillite, minor conglomerate
- Mp1 CHERT-ARGILLITE-VOLCANIC UNIT: ribbon chert, cherty argillite, basaltic lava tuff, volcanic breccia, chlorite schist

UPPER PALEOZOIC AND ? OR TRIASSIC AND JURASSIC

- Pmd WESTCOAST COMPLEX: quartz diorite, diorite, tonalite, amphibolite, agmatite; minor metavolcanic and metasedimentary rocks
- Is recrystallised limestone, skarn

LOCAL GEOLOGY (G.S.C.)



LOCAL GEOLOGY (EBB CLAIMS)

AFTER ASSESSMENT REPORT 8278 BY M. TAVELA

LOCAL GEOLOGY

The following geological description is reproduced from the marginal notes on the Geological Survey of Canadas' open file map #821. This map was published in 1982 and based on the work of Dr. J.E. Muller from 1973 to 1981. The appropriate portion of this map is reproduced in this report as Plate 1 with the approximate claim and survey area boundaries outlined.

The claim area straddles the east-west trending San Juan River valley and associated major fault system. The northern half of the claims area is believed to be underlain by rocks of the West Coast Complex (PMd) comprised of a variety of plutonic and metamorphic basic crystalline rocks, including fine grained amphibolite, diorite, coarser grained quartz diorite and tonalite, all composed mainly of calcic plagioclase and hornblende. The southern half of the claims area is mapped as the Leech River formation; specifically the argillite-metagreywacke unit (ML₂). This unit is comprised of thinly bedded greywacke and argillite, slate, phyllite, quartz biotite schist.

The Ebb claim is completely surrounded by the Pan Island Resource Corporations' claim and has had an assessment report filed (#8278) for exploration credits in 1980. The general geology and plan map included in the report has been reproduced as Plate 2. No claim boundaries or geological contacts were identified on this map, however, the general geological environment and specifics concerning copper, nickel and cobalt mineralization observed in float samples can be ascertained from the written text.



AIRBORNE VLF-ELECTROMAGNETIC AND MAGNETIC SURVEY

This survey system simultaneously monitors and records the output signal from a proton precession magnetometer and two VLF-EM receivers installed in a bird designed to be towed 100 feet below a helicopter. A gimbal and shock mounted TV camera, fixed to the helicopter skid, provides input signal to a video cassette recorder allowing for accurate flight path recovery by correlation between the flight path cassette and air photographs of the survey area. A KING KRA-10A radar altimeter allows the pilot to continually monitor and control terrain clearance along any flight path.

Continuous measurements of the earth's total magnetic field intensity and of the total horizontal VLF-EM field strength of two transmission frequencies are stored in three independent modes: an analogue strip chart recorder, digital magnetic tapes and a digital video recovery system. A three-pen analogue power recorder provides direct, unfiltered recordings of the three geophysical instrument output signals. A Hewlett-Packard 9875 tape drive system digitally records all information as it is processed through an on-board micro-computer. The magnetic and electromagnetic data is also processed through the onboard micro-computer, incorporating an analogue to digital converter and a character generator, then superimposed along with the date, real time and terrain clearance upon the actual flight path video recording to allow exact correlation between geophysical data and ground location. The input signals are averaged and updated on the video display every second. Correlation between the strip chart, digital tape and the video flight path recovery tape is controlled via fiducial marks common to all systems. Line identification, flight direction and pertinent survey information are recorded on the audio track of the video recording tape.

DATA PROCESSING

Field data is digitally recorded, with the time of day fiducial, on magnetic cassettes in a format compatible with the Hewlett-Packard 9845 computer. The recovered flight path locations are digitized and the field data is processed to produce plan maps of each of the parameters. A variety of formats are available in which to display this data.

Total field intensity magnetic information is routinely edited for noise spikes and corrected for any diurnal variations recorded on a base magnetometer located in the survey area.

Total field intensity VLF-EM signals are sensitive to topographic changes and sensor oscillation. Oscillation effects can be reduced by filters tuned to the dominant period. Long period effects attributable to topography can be removed by high pass filtering the planimetric data.



DISCUSSION OF RESULTS

Survey lines were run in a north-south direction and spaced at 300 metre intervals. Approximately 300 kilometres of the 2400 kilometre survey were required to evaluate the Pan Island Resource Corporation claims. The magnetic data is presented in contour form as Figure 2 and the VLF-EM data for the Seattle and Cutler frequencies as Figures 3 and 4 respectively.

I Magnetic Survey

The magnetic contour map clearly delineates a number of regional geological features within the claims area. An east-west trending magnetic low (less than 55,900 gammas) follows the San Juan River across the claims and is interpreted as reflecting the San Juan Fault zone. The trend is relatively broad, likely a result of thick overburden in the river valley, and contains a series of closed lows along its' length. The exact position of the fault within this trend is unresolved. Two similiar low trends are observed in the magnetic data, both of which are interpreted as faults. One strikes northwest-southeast across the RENFREW 2 and LIZARD 1 claims and the other strikes north-northeast to south-southwest across the FAIRY 1 claim.

The southern half of the claim block exhibits relatively quiet background magnetic intensities (less than 56,100 gammas) with a gentle gradient increasing to the north. This response likely reflects the Leech River Formation (argillite-metagreywacke unit). A cluster of dipole anomalies within this background and centred about the RENFREW 3 claim are likely related to intersecting fault patterns.



The northern half of the claim block is dominated by two large magnetic highs which enter the area from the north and trend southeasterly. These trends possess a strong internal gradient which produce central cores to the anomalies of approximately 57,300 gammas. These strong features are connected by an east-west trending band of magnetic highs. This anomaly may be an erosional remnant or separate stock of intrusive, possibly fault controlled and should be considered an area of favorable geology for mineral exploration. The Geological Survey of Canada map suggest these magnetic highs reflect rocks of the West Coast Complex (quartz diorite, diorite, tonalite, amphibolite, agmatite with minor metavolcanic and metasedimentary rocks). The G.S.C. also suggest the contact between the West Coast Complex and Leech River Formation is fault controlled, however, there is no strong magnetic evidence to either confirm or contradict this interpretation.

In addition to the faults noted above, there are a number of other anomalous magnetic responses which have been interpreted as faults. These have been delineated on Figure 2.

II VLF-EM Survey

The VLF-EM data is illustrated in profile form as Figures 3 and 4. The Seattle frequency data is extremely noisy across the western portion of the claims, most likely a result of uncontrolled "bird" oscillation in the steep terrain. The profile maps have been superimposed on a photomosaic base map of the area and a number of good conductivity responses can be seen to correlate with streams. This is a common response and those anomalies have not been flagged on the profile maps or transferred to the magnetic contour map.



Those responses, which are considered on the basis of amplitude and character as originating from geological sources, are identified on both the appropriate profile map and Figure 2.

The larger anomalies which occur near the apparent Leech River - Pacific Coast Complex contact likely reflect fault zones. The smaller anomalies occurring within the background magnetic areas are as yet unidentified.

SUMMARY AND CONCLUSIONS

During the first part of March, 1984, Western Geophysical Aero Data Ltd. flew an airborne magnetic and VLF-electromagnetic survey in the Port Renfrew - Jordan River area of Vancouver Island. The survey was conducted on a participation basis and covered a large portion of Pan Island Resource Corporations' claim group. Approximately 300 line kilometers of data was recovered to evaluate these properties.

The magnetic data delineates two geological environments. Higher magnetic intensities across the northern half of the claim block likely reflect the West Coast Complex quartz diorite, diorite, amphibolite rocks. Lower and more stable magnetic intensities observed across the southern half of the property are interpreted as reflecting the Leech River Formation argillites and metagreywackes. The contact between these two magnetic responses is not clearly defined at this point, however, detailed geological input could resolve the magnetic interpretation.



The area appears to be extensively faulted as evidenced by two types of magnetic responses. Linear magnetic low trends, such as the response tracking the San Juan River and abnormally sharp gradients are both interpreted as evidence of faulting. East-west faulting appears to dominate in the area although north-south and northwest-southeast trends are present as well.

Most of the VLF-EM anomalies appear to correlate with faulting, however, some likely originate from more localized targets.

A number of magnetic and VLF-electromagnetic anomalies have been identified as "Areas of Interest" on the Magnetic Intensity Contour Map (Figure 2). They include a cluster of dipole anomalies centred about the RENFREW 3 claims which occur near fault intersections. Also included are strong magnetic lows occurring on the JUAN 1 and FAIRY 1 claims which are similiar to an anomaly observed on the Ebb claim which is apparently associated with Co,Ni and Cu mineralization at Wren Creek. Isolated anomalies randomly distributed across the claims area are also noted as illustrated on Figure 2.

The east-west trending "finger" of magnetic highs connecting the large magnetic highs to the north of the San Juan River, as well as the edge of the large highs are expected to be favorable geological environments for mineral accumulations.



RECOMMENDATIONS

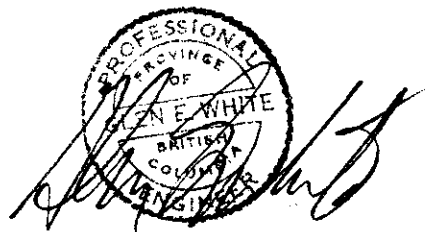
The regional interpretation presented in this report was based on the observed magnetic responses and very limited geological input. It should be reviewed by a geologist familiar with the claims area with the intention of identifying the major trends observed in the magnetic data and refining the geological contacts.

The anomalies noted as "Areas of Interest" on Figure 2 warrant ground followup exploration. They originate from localized anomalous conditions and should be identified by normal prospecting techniques. Depending upon the availability of outcrop, some of the areas may require ground magnetic or electromagnetic surveying to precisely locate the anomalies.

Respectfully submitted,



E. Trent Pezzot B.Sc.,
Geophysicist



Glen E. White B.Sc., P. Eng.
Consulting Geophysicist



INSTRUMENT SPECIFICATIONS

BARRINGER AIRBORNE MAGNETOMETER

MODEL: Nimbin M-123
 TYPE: Proton Precession
 RANGE: 20,000 to 100,000 gammas
 ACCURACY: ± 1 gamma at 24 V d.c.
 SENSITIVITY: 1 gamma throughout range
 CYCLE RATES:
 Continuous 0.6, 0.8, 1.2 and 1.9 seconds
 Automatic 2 seconds to 99 minutes in 1 second steps
 Manual Pushbutton single cycling at 1.9 seconds
 External Actuated by a 2.5 to 12 volt pulse longer than 1 millisecond.

OUTPUTS:
 Analogue 0 to 99 gammas or 0 to 990 gammas
 - automatic stepping
 Visual 5 digit numeric display directly in gammas

EXTERNAL
 OUTPUTS:
 Analogue 2 channels, 0 to 99 gammas or 0 to 990 gammas at 1 m.a. or 1 volt full scale deflection.
 Digital BCD 1, 2, 4, 8 code, TTL compatible.

SIZE: Instrument set in console
 30 cm X 10 cm X 25 cm

WEIGHT: 3.5 Kg

POWER
 REQUIREMENTS: 12 to 30 volts dc, 60 to 200 milliamps maximum.

DETECTOR: Noise cancelling torroidal coil installed in airfoil.

INSTRUMENT SPECIFICATIONSSABRE AIRBORNE VLF SYSTEM

Source of Primary Field: VLF radio stations in the frequency range of 14 KHz to 30 KHz.

Type of Measurement: -Horizontal field strength

Number of Channels: -Two; Seattle, Washington at 24.8 KHz
-Cutler, Maine at 17.8 KHz

Type of Sensor: -Two ferrite antennae arrays, one for each channel, mounted in magnetometer bird.

Output: -0 - 100 mV displayed on two analogue meters (one for each channel)

-recorder output posts mounted on rear of instrument panel

Power Supply: -Eight alkaline 'AA' cells in main instrument case (life 100 hours)
-Two 9- volt alkaline transistor batteries in bird (life 300 hours)

Instrument Console: -Dimensions -30 cm x 10 cm x 25 cm

-Weight - 3.5 Kg.

Instrument Specifications

FLIGHT PATH RECOVERY SYSTEM

i) T.V. Camera:

Model: RCA TC2055 Vidicon
Power Supply: 12 volt DC
Lens: variable, selected on basis of expected terrain clearance
Mounting: Gimbal and shock mounted in housing, mounted on helicopter skid

ii) Video Recorder:

Model: Sony SLO - 340
Power Supply: 12 volt DC / 120 volt AC (60Hz)
Tape: Betamax $\frac{1}{2}$ " video cassette - optional length
Dimensions: 30 cm x 13 cm x 35 cm
Weight: 8.8 Kg
Audio Input: Microphone in - 60 db low impedance microphone
Video Input: 1.0 volt P-P, 75 Ω unbalanced, sync negative from camera

iii) Altimeter:

Model: KING KRA-10A Radar Altimeter
Power Supply: 27.5 volts DC
Output: 0-25 volt (1 volt / 1000 feet) DC signal to analogue meter, 0-10 v (4mv/ft) analogue signal to microprocessor
Mounting: fixed to T.V. camera housing, attached to helicopter skid



Instrument Specifications

DATA RECORDING SYSTEM

i) Chart Recorder

Type: Esterline Angus Miniservo III Bench AC
 Ammeter - Voltmeter Power Recorder
 Model: MS 413B
 Specification: S-22719, 3-pen servo recorder
 Amplifiers: Three independent isolated DC amplifiers
 (1 per channel) providing range of
 acceptable input signals
 Chart: 10 cm calibrated width Z-fold chart
 Chart Drive: Multispeed stepper motor chart drive,
 Type D850, with speeds of 2,5,10,15,30
 and 60 cm/hr. and cm/min.
 Controls: Separate front mounted slide switches for
 power on-off, chart drive on-off, chart
 speed cm/hr.- cm/min. Six position chart
 speed selector, Individual front zero
 controls for each channel.
 Power Requirements: 115/230 volts AC at 50/60Hz (Approximately 30 W.
 Writing System: Disposable fibre tipped ink cartridge
 (variable colors)
 Dimensions: 38.6 cm x 16.5 cm x 43.2 cm
 Weight: 9.3 kg.

ii) Digital Video Recording System

Type: L.M. Microcontrols Ltd. Microprocessor
 Control Data Acquisition System
 Model: DADG - 68
 Power Requirements: 10 - 14 volts DC, Maximum 2 amps.
 Input Signal: 3,0 - 100 mvolt DC signals
 1,0 - 25 volt DC signals
 Microprocessor: Motorola MC-6800
 CRT Controller: Motorola MC-6845
 Character Generator: Motorola MCM-6670
 Analogue/Digital
 Convertor: Intersil 7109
 Multiplexer: Intersil IH 6208
 Digital Clock: National MM 5318 chip
 9 volt internal rechargeable nickle-
 cadmium battery
 Fiducial Generator: internally variable time set controls
 relay contact and audio output
 Dimensions: 30 cm x 30 cm 3 13 cm
 Weight: 3 kg.



DATA RECORDING SYSTEM (CON'T)iii) Digital Magnetic Tape

Type: Hewlett Packard cartridge tape unit

Model: 9875A

Power Requirements: 24 volt d.c.

Data Format: HP's Standard Interchange Format (SIF)

Tape Cartridge: HP 98200A 225K byte cartridge compatible with HP Series 9800 desktop computers.

Tape Drive: Dual tape drives providing up to 8 hours continual recording time.

Controller: Internal micro-computer provides 23 built in commands.

: External computer generated commands.

COST BREAKDOWN

By agreement between the three participating exploration companies and Western Geophysical Aero Data Ltd. the survey was conducted and individual reports written for an all inclusive cost of \$55.00 per line kilometre plus helicopter expenses. Each participant was to be responsible for a portion of the total cost based on their percentage of the total number of units surveyed.

Helicopter	\$15,400.00
Survey, processing, reports	
2400 km @ \$55.00/km	<u>132,000.00</u>
Total cost	\$147,400.00

Pan Island Resource Corp. owns 301 units of the 1460 units surveyed.

Pan Island Resource Corporations' portion of the survey cost is \$30,389.00.



STATEMENT OF QUALIFICATIONS

NAME: PEZZOT, E. Trent

PROFESSION: Geophysicist - Geologist

EDUCATION: University of British Columbia-
B.Sc.- Honors Geophysics and Geology

PROFESSIONAL
ASSOCIATIONS: Society of Exploration Geophysicist

EXPERIENCE: Three years undergraduate work in
geology - Geological Survey of Canada,
consultants.

Three years Petroleum Geophysicist,
Senior Grade, Amoco Canada Petroleum
Co. Ltd.

Two Years consulting geophysicist,
Consulting geologist - B.C., Alberta,
Saskatchewan, N.W.T., Yukon, western
U.S.A.

Four years geophysicist with Glen E.
White Geophysical Consulting & Services
Ltd.

STATEMENT OF QUALIFICATIONS

NAME: WHITE, Glen E., P. Eng.

PROFESSION: Geophysicist

EDUCATION: B.Sc. Geophysicist - Geology
University of British Columbia.

PROFESSIONAL ASSOCIATIONS: Registered Professional Engineer,
Province of British Columbia.

Associate member of Society of Exploration Geophysicists.

Past President of B.C. Society of Mining Geophysicists.

EXPERIENCE: Pre-Graduate experience in Geology -
Geochemistry - Geophysics with Anaconda
American Brass.

Two years Mining Geophysicist with Sulmac
Exploration Ltd. and Airborne Geophysics
with Spartan Air Services Ltd.

One year Mining Geophysicist and Technical
Sales Manager in the Pacific north-west for
W.P. McGill and Associates.

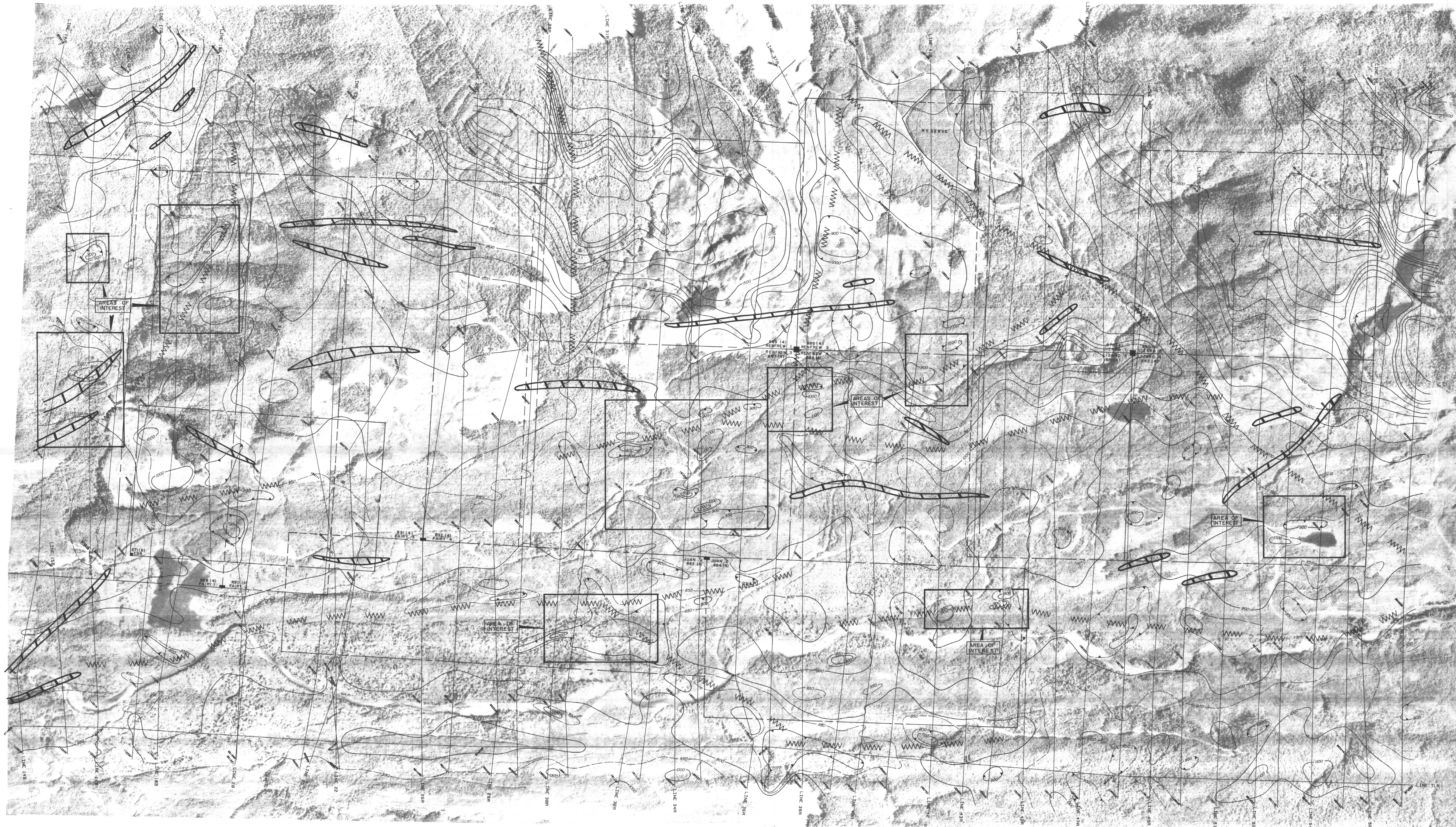
Two years Mining Geophysicist and supervisor
Airborne and Ground Geophysical Divisions
with Geo-X Surveys Ltd.

Two years Chief Geophysicist Tri-Con Explor-
ation Surveys Ltd.

Eleven years Consulting Geophysicist.

Active experience in all Geologic provinces
of Canada.





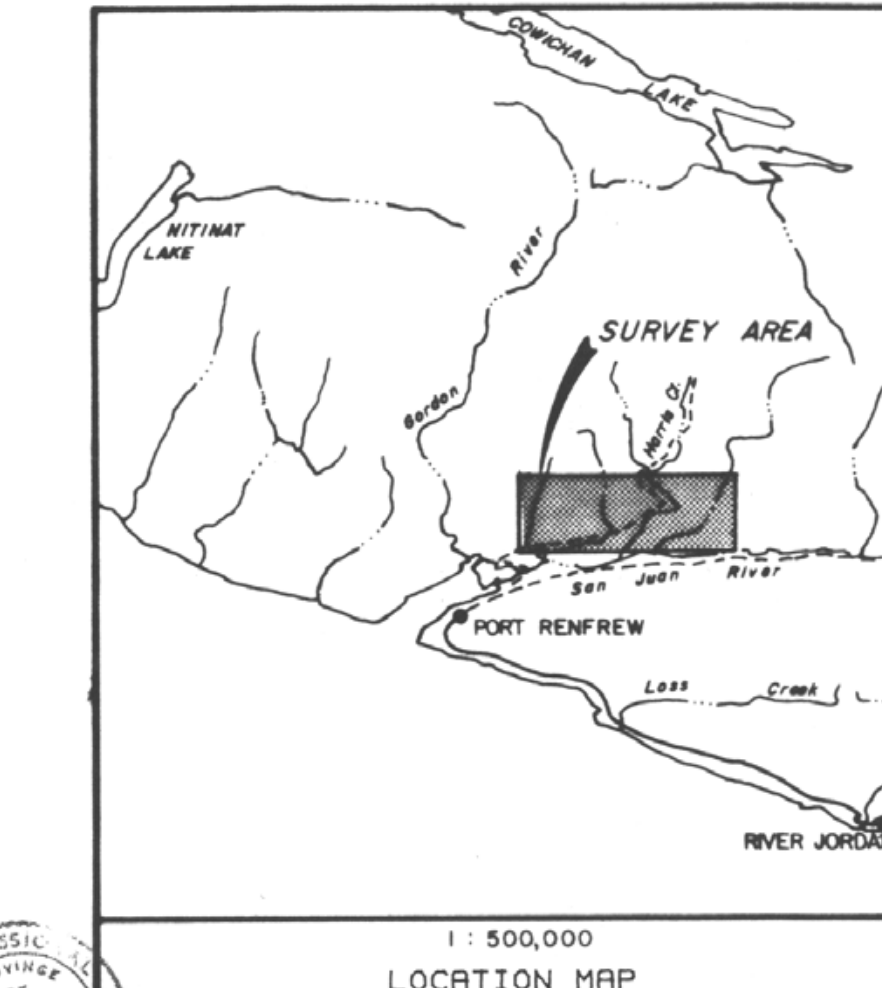
GEOLOGICAL BRANCH
ASSESSMENT REPORT

12,184

KEY

- INSTRUMENT: Barringer M-123 Magnetometer
- Data corrected for diurnal variations
- Base value= 55000 gammas
- Primary Contour Interval= 100 gammas
- Claim boundary ————
- Claim post ■
- Magnetic Low ————
- Inferred Fault W W W
- VLF-EM Conductor ————
- Area of Interest □

NTS. 92 C/9



PAN ISLAND RESOURCE CORP.
MIDAS PROJECT
MAGNETIC CONTOUR MAP
TOTAL FIELD INTENSITY (gammas)

DATE: MAR/84

FIG.: 2