81-1230-10014

TUSCALOOSA OIL & GAS INC.

Geophysical Report
on an
Airborne VLF-EM & Magnetometer Survey

EA Claim, Similkameen M.D.
Latitude 49°18'N Longitude 120°10'W
N.T.S. 92 H/8E

AUTHORS: E. Trent Pezzot, B.Sc.,
Geophysicist
Glen E. White, B.Sc., P.Eng.,
Consulting Geophysicist

DATE OF WORK: October 23, 1981

DATE OF REPORT: January 11, 1982

Part 2
of 2

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ILLUSTRATIONS

INTRODUCTION

Western Geophysical Aero Data Ltd. conducted an airborne magnetometer and VLF-electromagnetometer survey across a group of claims located southwest of the gold producing Giant Mascot mine. The survey was undertaken with the intent of detecting and locating any anomalous magnetic and/or conductive responses which might be reflecting a geological environment favorable for similar mineralization to that observed to the northeast.

Approximately 35 kilometers of this 177 kilometer survey was flown on behalf of Tuscaloosa Oil and Gas Inc. across their EA claim.

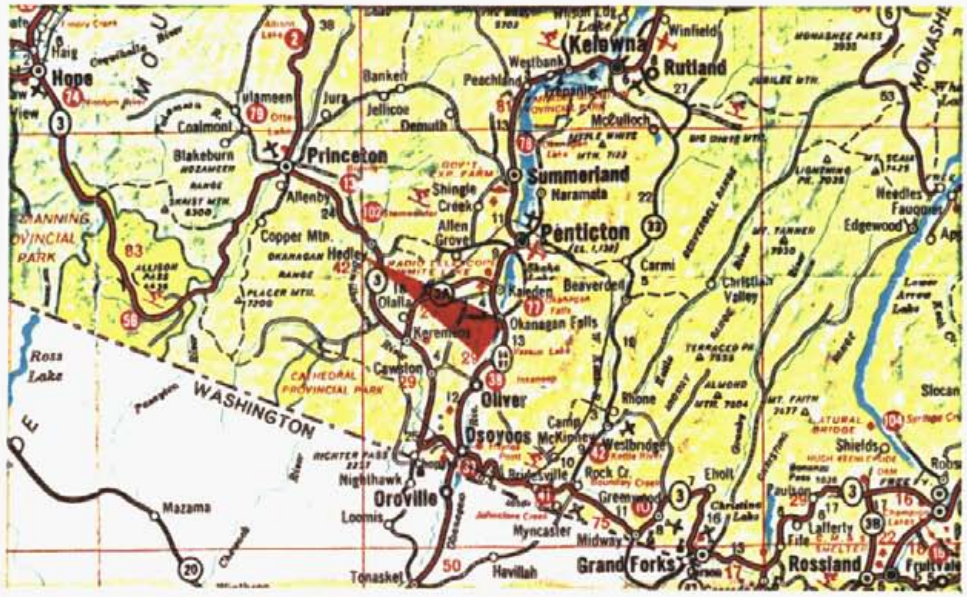
PROPERTY

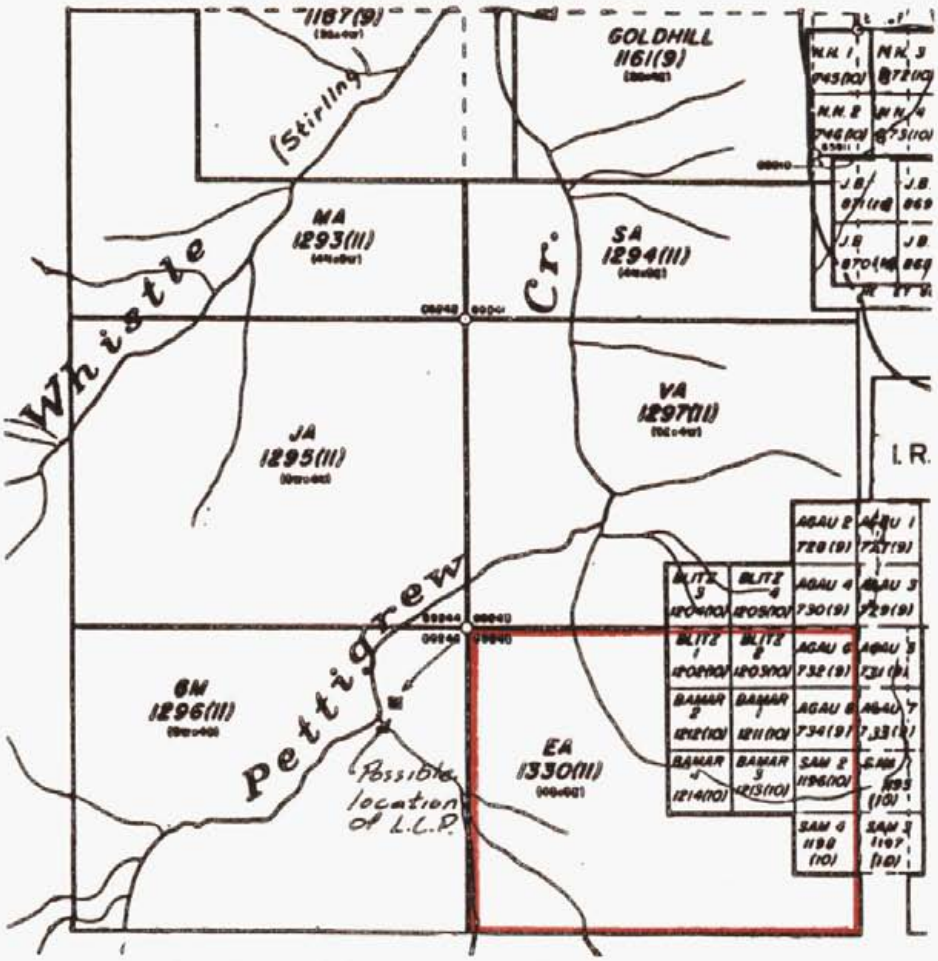
The EA claim (record number 1330(11)) was staked as a four unit by five unit block as illustrated on Figure 1. Ten of the twenty units described by the legal corner post were previously staked and the mineral rights in these areas are not owned by Tuscaloosa Oil and Gas Inc.

In a report by A.F. Roberts, P.Eng., dated May 27, 1981, the author suggests the LCP describing the EA, GM, JA, and VA claims is located approximately 600 meters to the southwest of the location shown on the government claim map. With this positioning the EA claim would encompass approximately 17 units.

LOCATION AND ACCESS

The EA claim is located approximately 8 kilometers southwest of Hedley, B.C. in the Similkameen Mining Division and NTS 92 H/8E. The approximate geographical co-ordinates are latitude $49^{o}18'$N, longitude $120^{o}10'$W.





TUSCALOOSA OIL & GAS INC.
EA CLAIM
LOCATION AND CLAIMS MAP

Western Geophysical Aero Data Ltd.

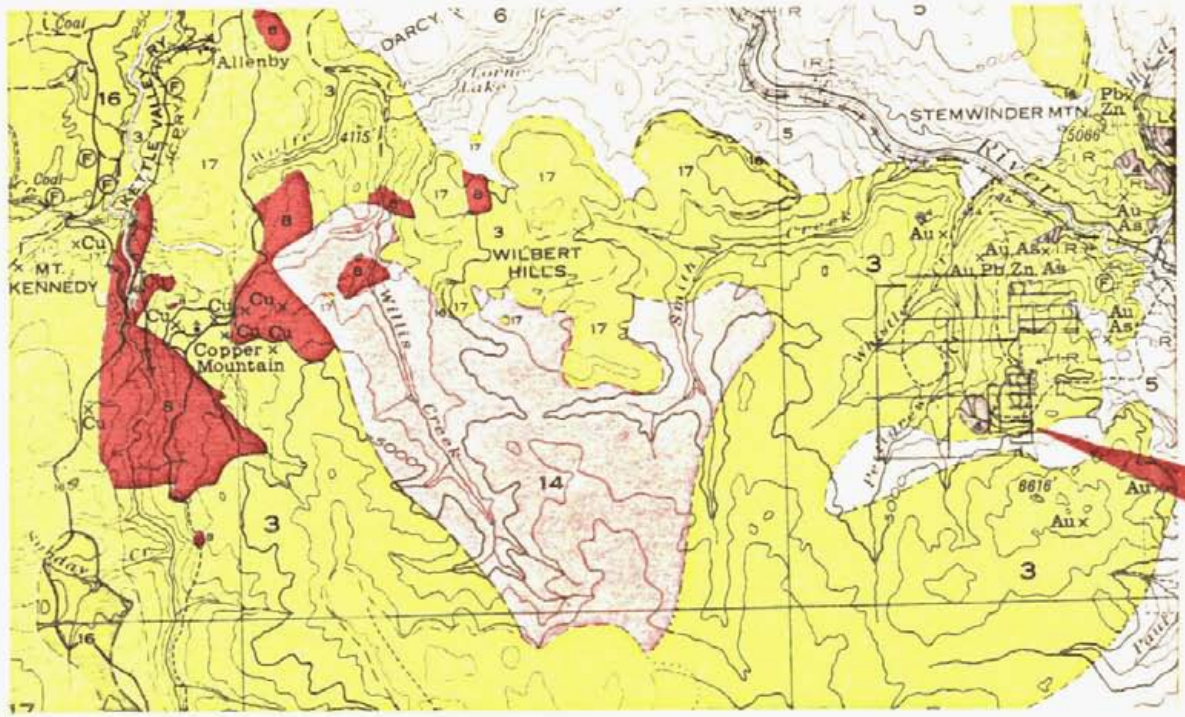
FIG 1

A well maintained gravel road, which intersects B.C. highway #3 at a point approximately 3 kilometers northwest of the town of Hedley, passes within 3 kilometers of the claim area. Numerous logging roads in the area provide 4-wheel drive access to various areas on the claim.

GENERAL GEOLOGY

The survey area is outlined on the Geological Survey of Canada's map 888A which depicts the surface geology as mapped by H.M.A. Rice, 1939, 1941 and 1944 and is presented in this report as Plate 1. The majority of the area is mapped as Nicola Group rocks (3) which is a large and varied assemblage consisting mainly of many colored volcanic rocks ranging from porphyritic and non-porphyritic dacite to basalt. Interbedded with the lavas are belts and lenses of sedimentary and pyroclastic rocks. The largest of these, in the vicinity of Hedley, is host to the most important gold mines in the area. Most of the Nicola rocks are not strongly metamorphosed but they are in places sheared into chlorite and sericite schists.

One of the three recognized types of Coast intrusions is mapped across the southern claims of the survey area. The rocks (5) are characteristically acidic, with plenty of visible free quartz and are described as a grey, slightly gneissic granodiorite. Also present in this area is a roughly circular shaped, ultrabasic intrusive body (4) composed of peridotite, pyroxenite and gabbro. This rock type is believed to be the oldest intrusive of any size in the map area; it is however probably closely related to the Coast intrusions.



LOCAL GEOLOGY

Western Geophysical Aero Data Ltd.

PLATE I

SURVEY GRID

This survey is a portion of a larger survey which encompassed areas to the north and west of the EA claim. The survey grid was initially outlined on a photomosaic base and consisted of thirty-one east-west trending lines spaced at two hundred meter intervals. The eastern portions of lines 1 through 12 covered the EA claim and their actual positions, as defined by the video flight path and data recovery tape, are illustrated on Figure 2.

PREVIOUS WORK

Other than a cursory geological inspection reported on by A.F. Roberts, May 27, 1981, no exploration activity is known of by the authors.

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 50 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 Bonzer 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 two independent modes: an analogue strip chart recorder and a digital video recovery system. A three-pen analogue power recorder provides direct, unfiltered recordings of the three geophysical instrument output signals. Correlation between the strip chart and the video flight path recovery tape is controlled via fiducial marks common to both systems. The magnetic and electromagnetic data is also processed through the on-board micro-computer, incorporating an analogue to digital converter and a character generator, then superimposed along with real time and terrain clearance upon the actual flight path video recording to allow exact correlation between geophysical data and ground location. The continuous input magnetic signal is processed at the maximum A/D converter rate, averaged and updated on the video display every second. Line identification, flight direction and pertinent survey information are recorded on the audio track of the video recording tape.

DISCUSSION OF RESULTS

I Overall Survey Grid

The total field intensity magnetic data is presented in contour form over a photomosaic base of the survey grid as Figure 2, and can be compared to the geological information shown on Plate 1. The majority of the grid is mapped as Nicola Group rocks (3) and exhibits a background magnetic field intensity of approximately 57,000 gammas. In the southeast portion of the map area, along a tributary of Pettigrew Creek, a roughly circular outcrop of peridotite, pyroxenite gabbro (4) is reflected as a low in the magnetic field (line 8 - Figure 3). This magnetic low extends to the southeast, possibly indicating an unmapped extension of the gabbro intrusion in the same direction. The geologically mapped Coast Intrusive unit (5) in the southwest section of the survey grid appears to be reflected by higher magnetic values (approximately 57,200 gammas) as illustrated on line 7, Figure 4. Similar magnetic values are observed along the eastern border of the survey grid, possibly reflecting a similar intrusive presently unmapped by surface geology.

Along the western edge of the low magnetic trend believed related to the gabbro intrusion a roughly circular shaped magnetic high is observed centered on line 11 (Figure 5). This anomaly is reflecting a zone of high magnetic susceptibility materials, possibly a dioritic phase in an alteration zone around the gabbro intrusion. Similarly high magnetic values are observed to the south on lines 3, 2 and 1 and could be related to the same feature.

No strong VLF-EM anomalies were located across the survey grid which could be interpretted as the response to a near surface, highly conductive body. A number of narrow and weak field strength increases are scattered across the grid as shown on the interpretation map, Figure 2. These

anomalies likely reflect small, slightly conductive, near surface features such as minor faults or contact zones.

II EA Claim

As noted in the discussion of the property there is a discrepancy on the location of the legal corner post between the government map and the findings of Mr. A.F. Roberts. According to the government map the strong magnetic anomaly believed to be reflecting a dioritic phase of an alteration zone on the western flank of the gabbro intrusion is entirely within the EA claim. According to Mr. Roberts both the strong anomaly on line 11 (Figure 5) and the gabbro intrusion lie on the border between the EA claim and the VA claim to the north. A magnetic low of similar anplitude to the low reflecting the gabbro intrusion is observed on lines 9 through 11 (Figure 6). This anomaly is presently positioned on the GM claim but may belong partially on the EA claim if the LCP is situated as Mr. Roberts indicates.

The magnetic responses believed to be reflecting an extension to the gabbro intrusion and a possible alteration zone occur in part on the EA claim. These anomalies are open to the southeast and the mineral rights are at this time unclaimed.

No meaningful VLF-EM anomalies are located on the EA claim.

SUMMARY AND RECOMMENDATIONS

During October, 1981 an airborne magnetic and VLF-electromagnetic survey was flown across a group of six claims southwest of Hedley, B.C. The survey was flown with the intent of assisting geological mapping and directing further exploration activity to the most favorable geological environments. Of the 177 line kilometers surveyed, 35 kilometers were flown across the EA claim.

It is apparent that the total magnetic field intensity measurements can by used to map the three geological environments known in the area. Based on the magnetic results it appears that the small gabbro intrusion mapped in the southeast section of the grid actually extends to the southeast and is open in that direction. A similar magnetic response occurs 1.5 kilometers west of the known gabbro intrusion and may be reflecting another, presently unmapped unit. A strong magnetic high, which is presently unexplained, borders the western edge of the southeast trending gabbro intrusion. This response may be reflecting a dioritic phase of an alteration zone surrounding the intrusion.

The relatively large Coast Intrusion in the southwest section of the grid displays a magnetic signature of approxiamtely 200 gammas above the intensity of the surrounding Nicola Group volcanics. A similar response occurs along the eastern border of the survey area and could be indicating another occurance of this rock unit.

The actual position of the legal corner post defining the EA, GM, JA and VA claims should be established to verify which geophysical anomalies occur on which claims. In any event the high magnetic anomaly bordering the mapped gabbro intrusion should be examined and explained. Based on encouraging results of this examination, the area to the south of the EA and GM claims along the anomalous magnetic trends should be explored further.

Additional airborne magnetic surveying in this area will be the most efficient method of reconnaisance mapping of these features. Detailing ground geophysical surveys could be directed on the basis of the reconnaisance survey results.

Respectfully submitted,

E. Trent Pezzot, B.Sc.,
Geophysicist

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

Instrument Specifications

SABRE AIRBORNE MAGNETOMETER

Type:	Proton Precession
Range:	20,000 gammas to 75,000 gammas
Repetition Rate:	Approximately 1 second or 3 seconds selected by toggle switch
Output:	Designed to operate into any potentiometric chart recorder with 0 to 0.1 volt scale
Display:	Digital dial plus analogue meter
Period:	Meter records last 1000 λ, 2000 λ, 5000 λ, of total field depending on scale selected. Zeroing system allows chart recording pen to be positioned anywhere on paper, so that if the pen is centred, the resulting scales that can be selected are $\pm$ 500 λ, $\pm$ 1000 λ, or $\pm$ 2500 λ. These scales are standard but virtually all others can be provided.
REsolution:	Resolution of the instrument itself is better than 1 gamma. Ultimate resolution depends on the accuracy of the chart recorder.
Detector:	Kerosene filled coil approximately 9 cm x 8 cm in diameter. Inductance - 60 millihenries Resistance - 7.5 ohms Weight - 2.2 Kg.
Operating Temperature:	Instrument - $-10^{\circ}C$ to $+60^{\circ}C$ Detector - $-40^{\circ}C$ to $+60^{\circ}C$
Dimensions:	Instrument Console - 30 cm x 10 cm x 25 cm Towed Bird - 1.7 m x 21 cm diameter
Weight:	Instrument Console - 3.5 Kg. Towed Bird - 30 Kg. (VLF-EM antennae system housed in bird with magnetometer detector)
Power Source:	Two 12 volt, 28 amp-hour lead acid batteries (gelled electrolyte)

Instrument Specifications

SABRE AIRBORNE VLF SYSTEM

Source of Primary Field:	VLF radio stations in the frequency range of 14 KH_z to 30 KH_z.
Type of Measurement:	- Horizontal field strength
Number of Channels:	- Two; Seattle, Washington at 18.6 KH_z
	- Annapolis, Maryland at 21.4 KH_z
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 to housing
- housing bolted to helicopter skid

ii) Video Recorder:

Model: Sony SLO - 340
Power Supply: 12 volt dc / 120 volt AC (60 H_z)
Tape: Betamex ½" 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: Bonzer Mk 10 Radar Altimeter
Power Supply: 12 - 25 volts dc
Output: 0 - 25 volt (1 volt / 1000 feet) dc signal split to microprocessor and analogue meter
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 413 B
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 2-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 50/60 H_z (Approximately 30 VA)
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 d c signals
1, 0 - 25 volt d c signal
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 x 13 cm
Weight: 3 Kg

COST BREAKDOWN

Personnel	Production	Dates	Total
J. Behenna	Survey Prep.	Oct. 12-16	$ 100.00
J. Miller & J. Harrington	Survey	Oct. 23	$ 300.00
J. Behenna	Data Recovery	Nov. 11-13, 16	$ 150.00
J. Behenna	Report Prep.	Jan. 12-14	$ 50.00

Helicopter	$ 550.00
Equipment Lease	$ 100.00
Vehicle Rental	$ 25.00
Meals	$ 21.00
Airphotography	$ 4.00
Mosaic Construction	$ 100.00
Photographics	$ 200.00
Interpretation and Report	$ 400.00
Drafting and Materials	$ 170.00
Report Reporduction	$ 80.00
Total	$2,250.00

STATEMENT OF QUALIFICATIONS

NAME: PEZZOT, E. Trent

PROFESSION: Geophysicist - Geologist

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

PROFESSIONAL ASSOCIATIONS: Society of Exploration Geophysicists

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

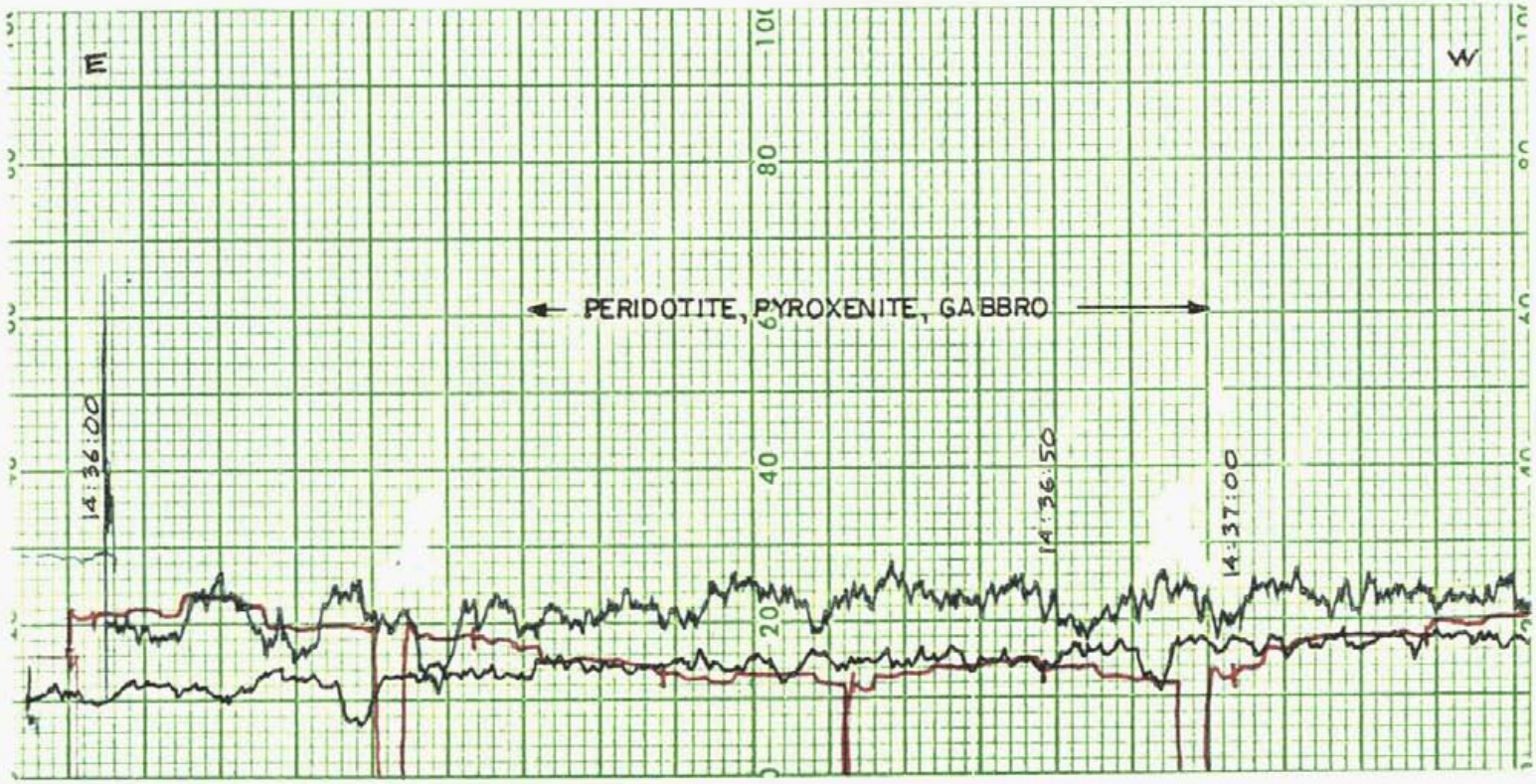
Three years Petroleum Geophysicist, Senior Grade, Amoco Canada Petroleum Co. Ltd.

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

Two 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 Exploration Surveys Ltd.
	Eleven years Consulting Geophysicist.
	Active experience in all Geologic provinces of Canada.



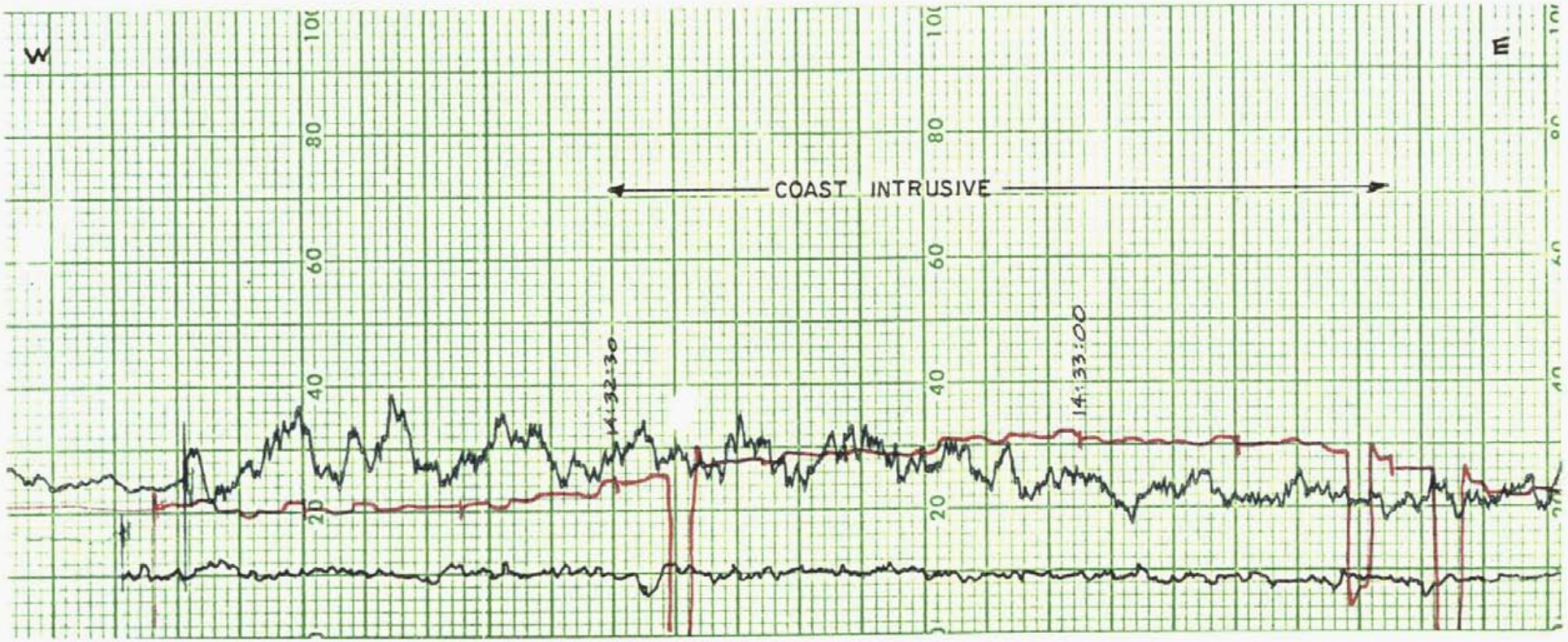
TUSCALOOSA OIL & GAS INC.
LINE 8

Western Geophysical Aero Data Ltd.

MAGNETOMETER BASE VALUE = 56600
MAGNETOMETER : VERTICAL SCALE 1 cm = 200 gammas
VLF-EM : VERTICAL SCALE 1 cm = 10%

MAGNETOMETER : RED
VLF-EM (SEATTLE) : BLUE
VLF-EM (ANNAPOLIS) : BLACK

FIG. 3



TUSCALOOSA OIL & GAS INC.

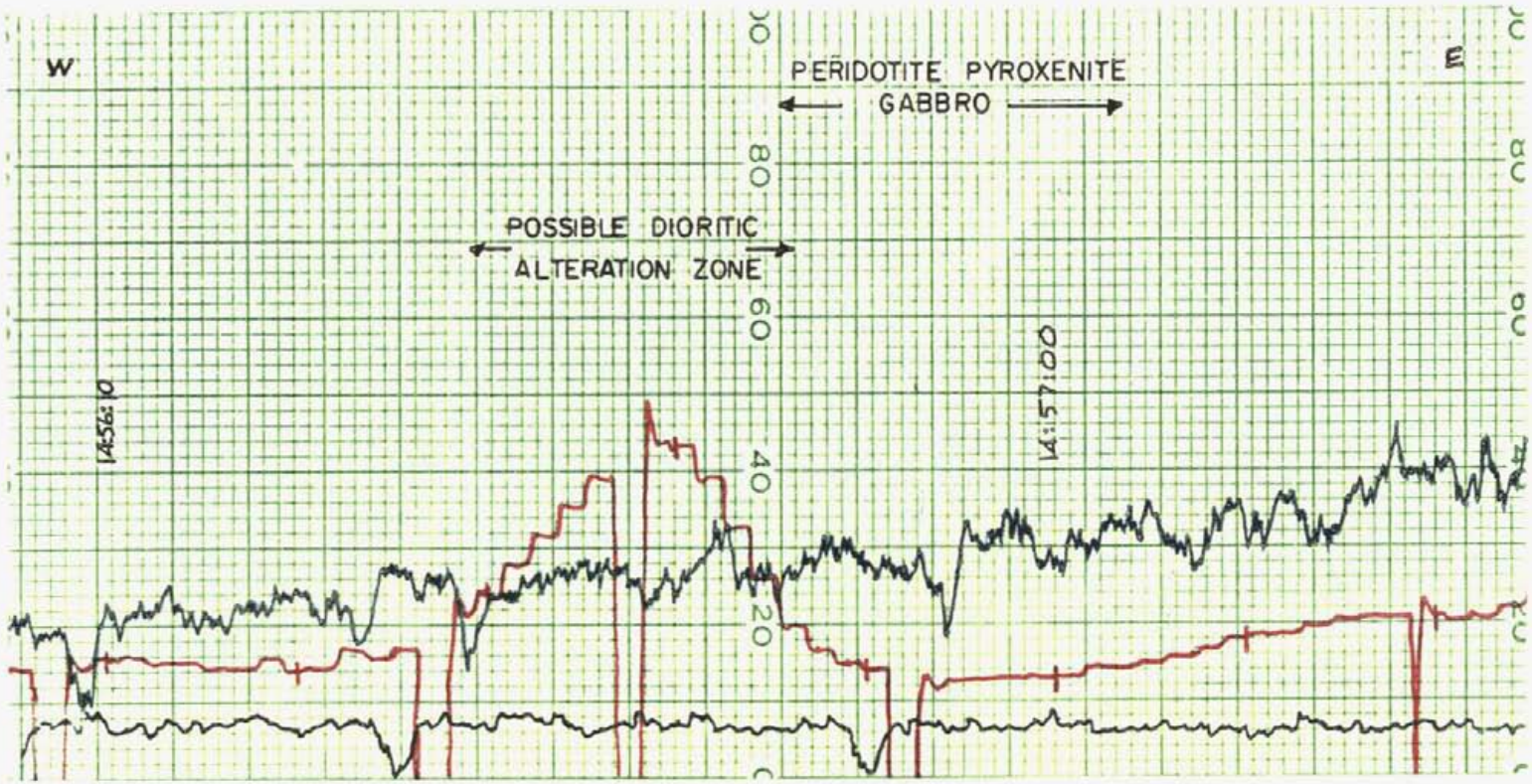
LINE 7

Western Geophysical Aero Data Ltd.

MAGNETOMETER BASE VALUE = 56600
MAGNETOMETER : VERTICAL SCALE 1 cm = 200 gammas
VLF-EM : VERTICAL SCALE 1 cm = 10%

MAGNETOMETER : RED
VLF-EM (SEATTLE) : BLUE
VLF-EM (ANNAPOLIS) : BLACK

FIG. 4



TUSCALOOSA OIL & GAS INC.

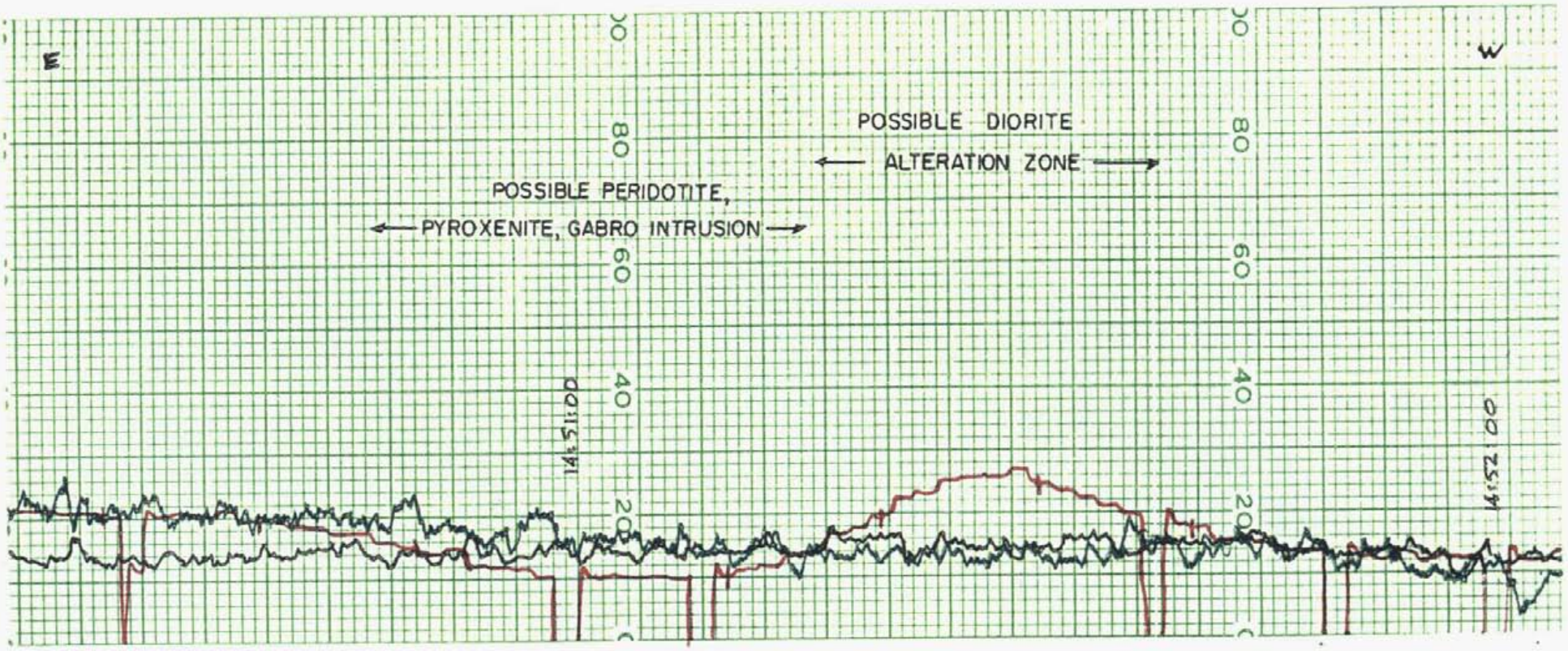
LINE 11

Western Geophysical Aero Data Ltd.

MAGNETOMETER BASE VALUE = 56600
MAGNETOMETER : VERTICAL SCALE 1 cm = 200 gammas
VLF-EM : VERTICAL SCALE 1 cm = 10%

MAGNETOMETER : RED
VLF-EM (SEATTLE) : BLUE
VLF-EM (ANNAPOLIS) : BLACK

FIG. 5



TUSCALOOSA OIL & GAS INC.

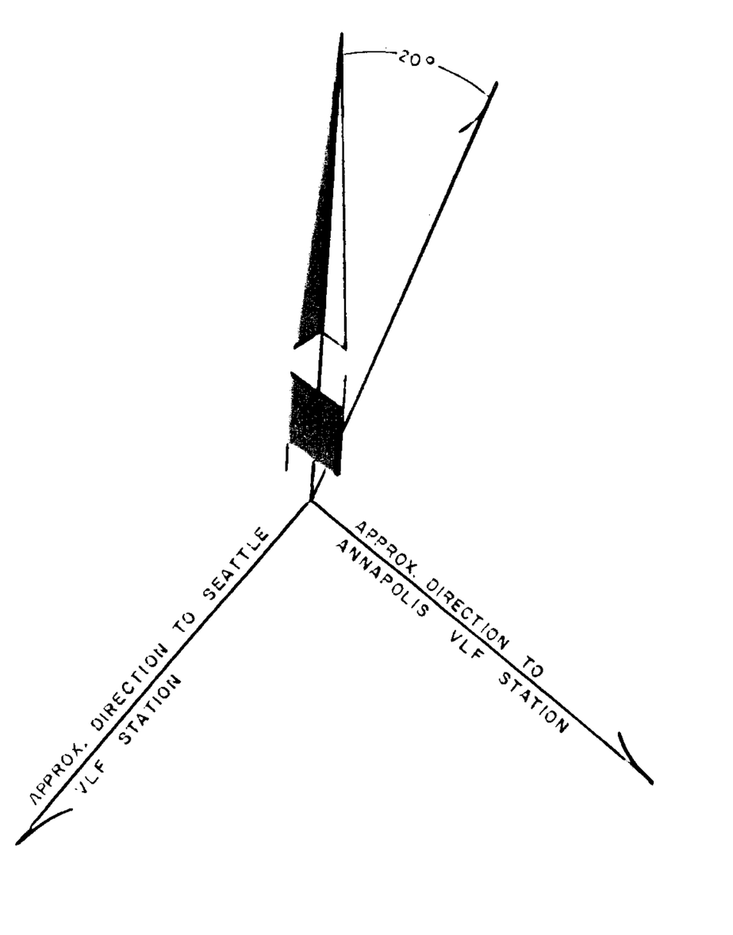
LINE 10

Western Geophysical Aero Data Ltd.

MAGNETOMETER BASE VALUE = 56600
MAGNETOMETER : VERTICAL SCALE 1 cm = 200 gammas
VLF-EM : VERTICAL SCALE 1 cm = 10%

MAGNETOMETER : RED
VLF-EM (SEATTLE) : BLUE
VLF-EM (ANNAPOLIS) : BLACK

FIG. 6



LEGEND:

- FLIGHT LINES
- 5 SECOND INTERVAL
- CLAIM BOUNDARIES
- 56600 TOTAL FIELD MAGNETIC INTENSITY CONTOURS - gammas
- III 12 VLF-EM ANOMALIES — % INCREASE ABOVE BACKGROUND
- EA CLAIM

INSTRUMENTS:

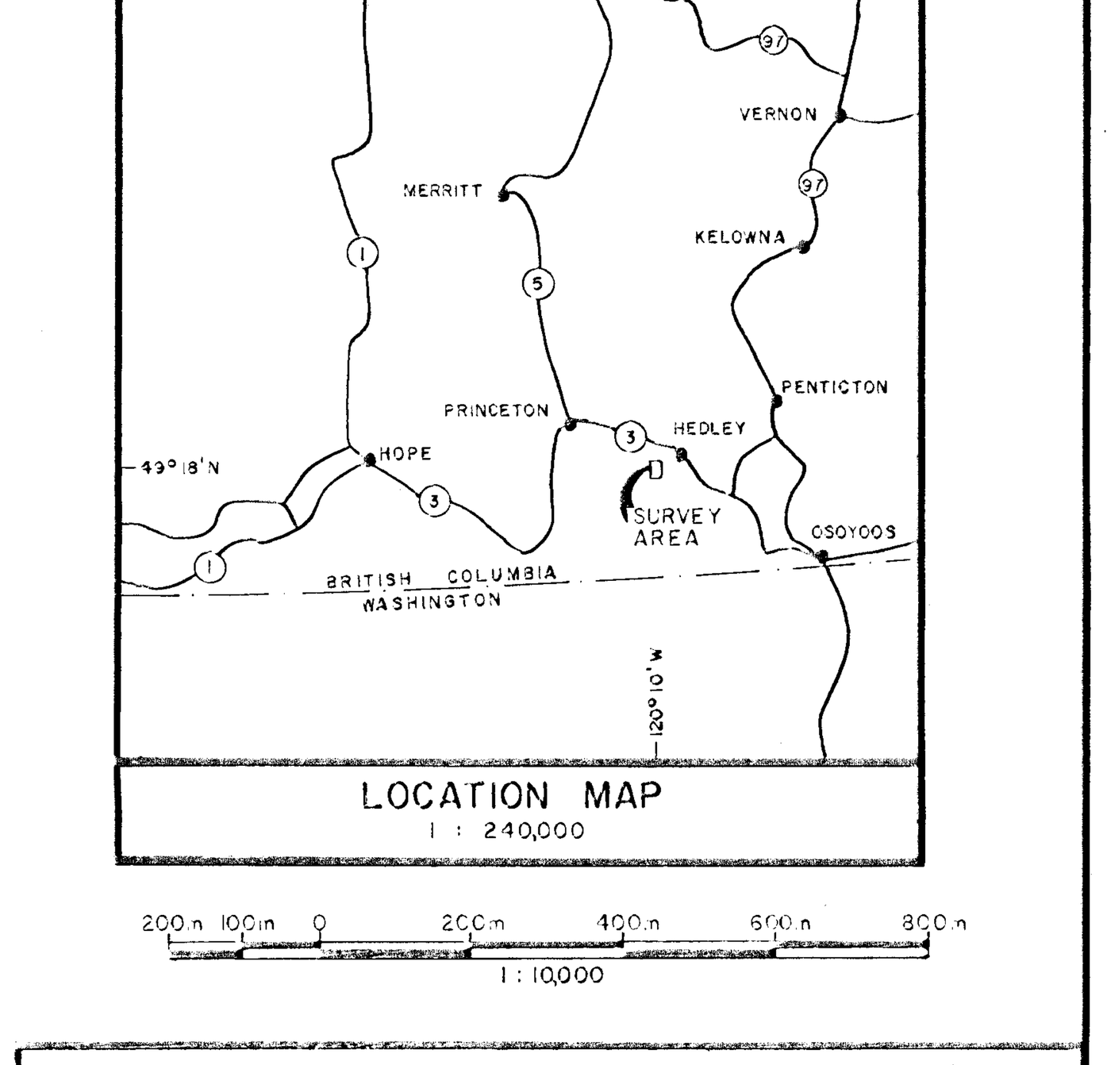
SABRE AIRBORNE MAGNETOMETER

SABRE AIRBORNE VLF-ELECTROMAGNETOMETER

i) SEATTLE, WASHINGTON - 18.6 Khz.

ii) ANNAPOLIS, MARYLAND - 21.4 Khz.

N.T.S. 92 H/8E



LOCATION MAP
1 : 240,000

200m 100m 0 200m 400m 600m 800m
1 : 10,000

TUSCALOOSA OIL & GAS INC.

EA CLAIM

SIMILKAMEEN MINING DIVISION - BRITISH COLUMBIA

AIRBORNE MAGNETOMETER AND VLF - ELECTROMAGNETOMETER SURVEY

GEOPHYSICAL INTERPRETATION MAP

Western Geophysical Aero Data Ltd.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — GLEN E. WHITE

Interpreted By: E.T.P.	
Drawn By: N.L.P.	
Checked By: E.T.P.	
Date: JAN./82	
Fig. No.: 2	