

BERLE OIL CORPORATION

Geophysical Report
on an

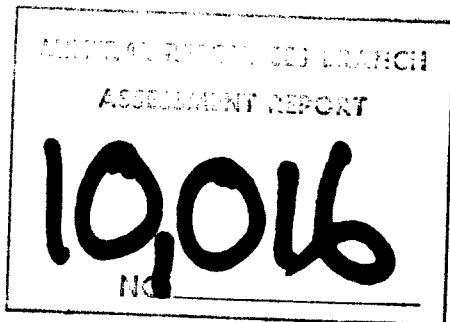
Airborne VLF-EM & Magnetometer Survey
JA claim, Similkameen Mining Division

Latitude 49°19'N Longitude 120°12'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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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.

The survey totalled some 177 line kilometers of which 29 kilometers covered the JA claim, owned by Berle Oil Corporation.

PROPERTY

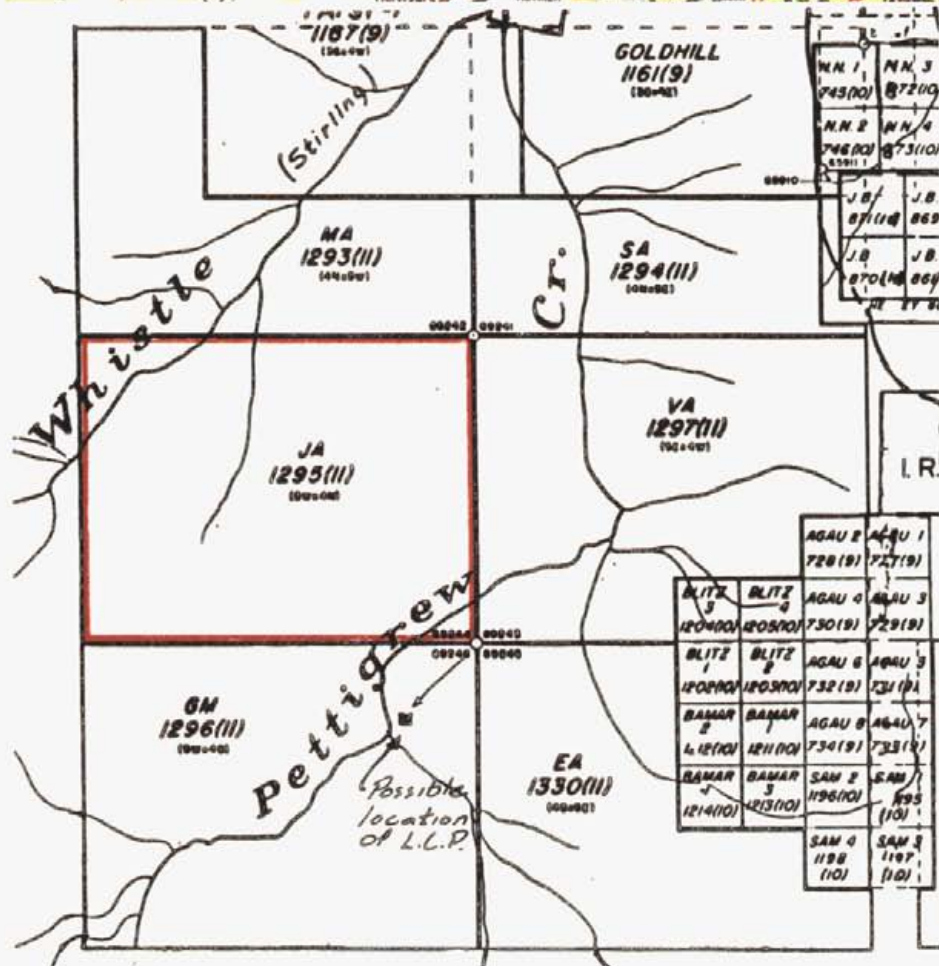
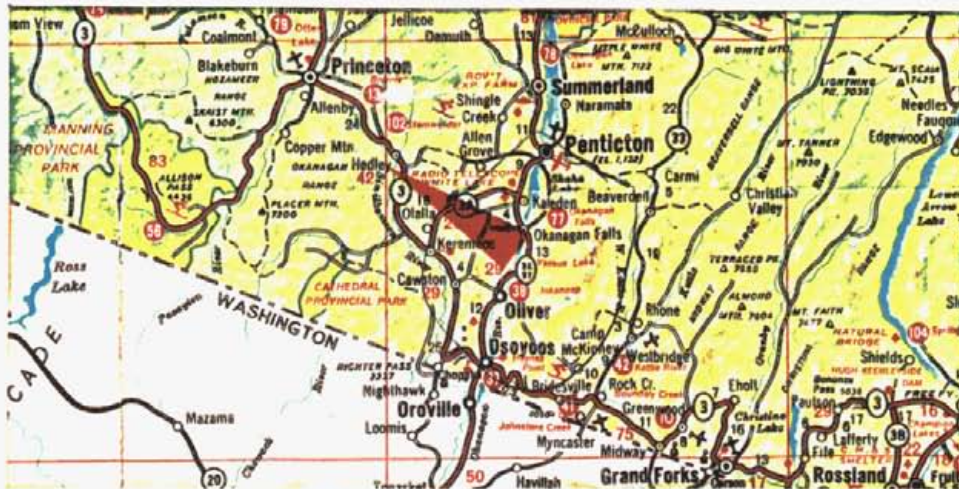
The JA claim (record number 1295(11)) was staked as a 20 unit claim as shown on the Location and Claims Map, Figure 1.

In a report dated May 27, 1981, A.F. Roberts, P.Eng., suggested the legal corner post defining the EA, VA, GM and JA claims are located some 600 meters southwest of the position given on the government claim map.

LOCATION AND ACCESS

The JA claim is located approximately 9 kilometers southwest of Hedley, B.C. in the Similkameen Mining Division and NTS 92 H/8E. The approximate geographical coordinates are latitude $49^{\circ}19'N$, longitude $120^{\circ}12'W$.

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



BERLE OIL CORPORATION
 JA CLAIM
 LOCATION AND CLAIMS MAP

SURVEY GRID

This survey is a portion of a larger survey which encompassed areas to the north, south and east of the JA claim. The survey grid was initially outlined on a photo-mosaic base and consisted of thirty-one east-west trending lines spaced at two hundred meter intervals. The eastern portions of lines 12 through 23 covered the JA claim and their actual positions, as defined by the video flight path and data recovery tape, are illustrated on Figure 2.

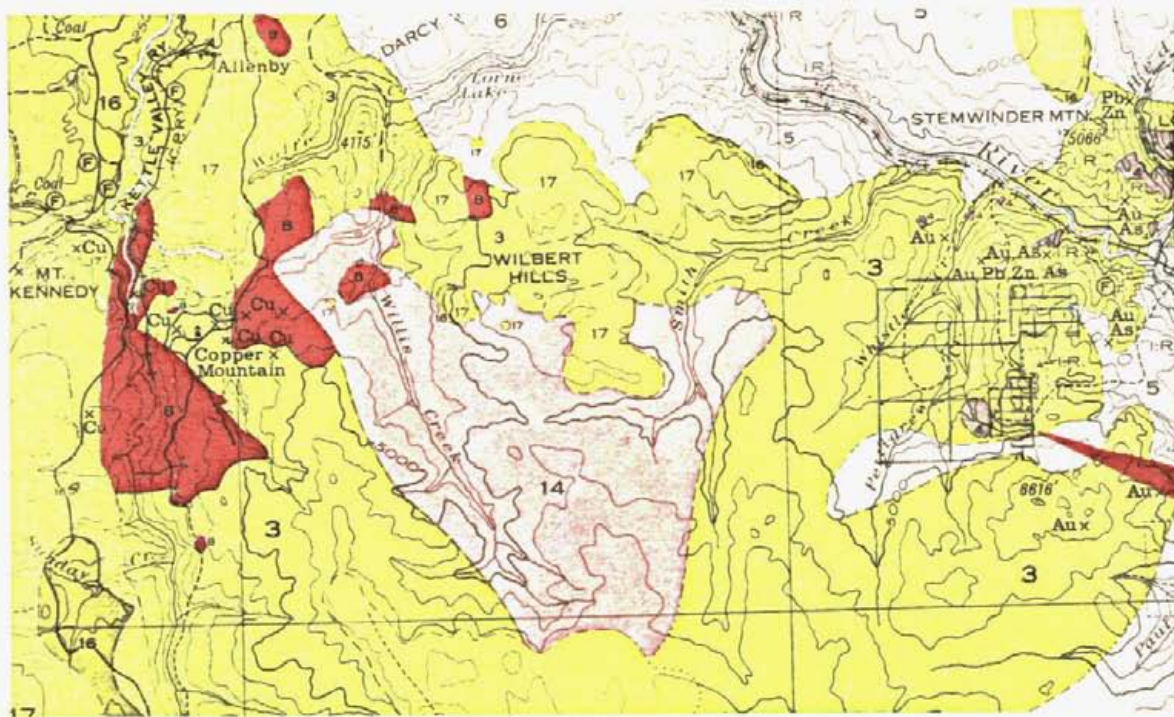
PREVIOUS WORK

No previous exploration activity is known by the authors to have been conducted on this 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



SURVEYED CLAIMS

LOCAL GEOLOGY

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.

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 interpreted 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 JA Claim

As noted in the property description, there is a discrepancy between the government claim map and the information gathered in a private examination with respect to the actual location of the legal claim post defining the JA claim. As presently located on the government maps, the JA claim is underlain entirely by Nicola Group volcanics. The magnetic data gathered supports the interpretation by showing an average total field intensity of some 57,050 gammas with no more than plus or minus 100 gamma variations. If the legal corner post is positioned 600 meters southwest of the government map position, the southern boundary of the JA claim would pass part way through a well defined magnetic low observed on lines 9 through 11 (Figure 6). This low could be reflecting a presently unmapped gabbro intrusion, similar to the unit mapped 1.5 kilometers to the east.

As stated above, only very weak VLF-EM responses were observed across the survey grid. One of the strongest of these anomalies (an 8% field increase) is located in the southwest corner of the JA claim (line 12, Figure 7). No explanation for this anomaly is visible on the video flight path recovery tape.

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, 29 kilometers were flown across the JA claim.

It is apparent that the total magnetic field intensity measurements can be 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 approximately 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 occurrence of this rock unit.

The JA claim lies entirely within the Nicola Group volcanic unit. Depending on the actual position of the legal corner post, the claim area might cover a portion of a low magnetic anomaly believed to represent an unmapped gabbro intrusion.

The area south of the survey grid is presently unclaimed and appears to contain southeasterly extensions of the inter-

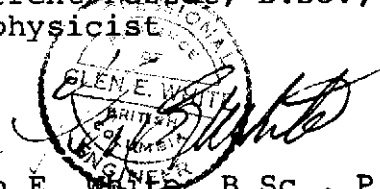
esting magnetic anomalies observed. This area should be explored further.

One weak VLF-EM anomaly was observed in the southwest corner of the JA claim. This anomaly likely results from a localized near surface, slightly conductive feature. Surface examination of this anomaly should be undertaken as part of any future exploration activity.

Respectfully submitted,



E. Trent Pazzet, 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 + 500 λ , + 1000 λ , or + 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°C to $+60^{\circ}\text{C}$
Detector - -40°C to $+60^{\circ}\text{C}$

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 SpecificationsSABRE 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

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 (Approx-
imately 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

Instrument SpecificationsFLIGHT PATH RECOVERY SYSTEMi) 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: Betamax 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

COST BREAKDOWN

<u>PERSONNEL</u>	<u>PRODUCTION</u>	<u>DATES</u>	<u>TOTAL</u>
J. Behenna	Survey Preparation	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 Preparation	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 Reproduction			\$ 80.00
Total			\$2,250.00

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 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

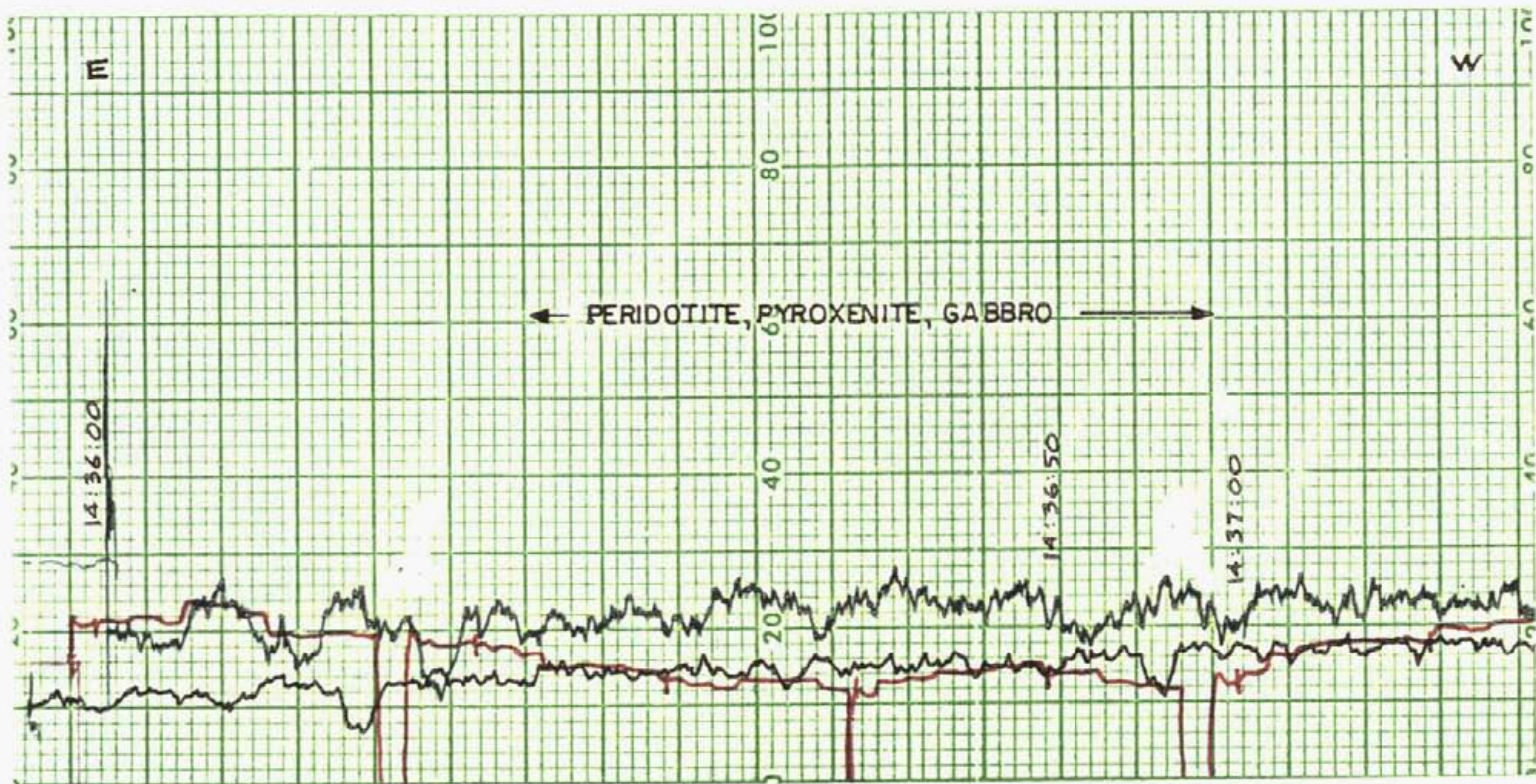
NAME: WHITE, Glen E., P.Eng.

PROFESSION: Geophysicist

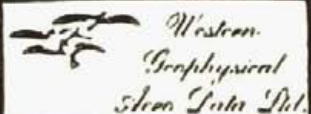
EDUCATION: B.Sc. Geophysicist - Geology
University of British Columbia.

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.

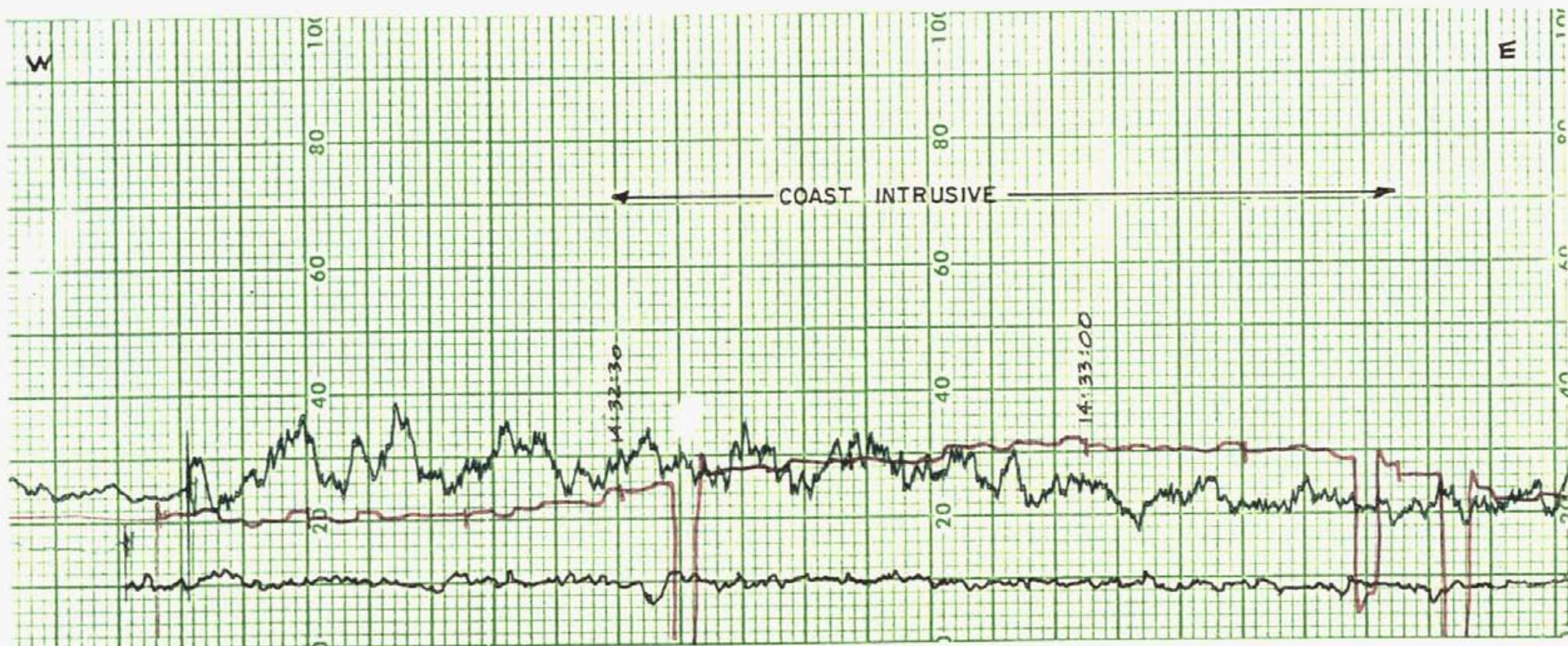


BERLE OIL CORPORATION
LINE 8



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

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



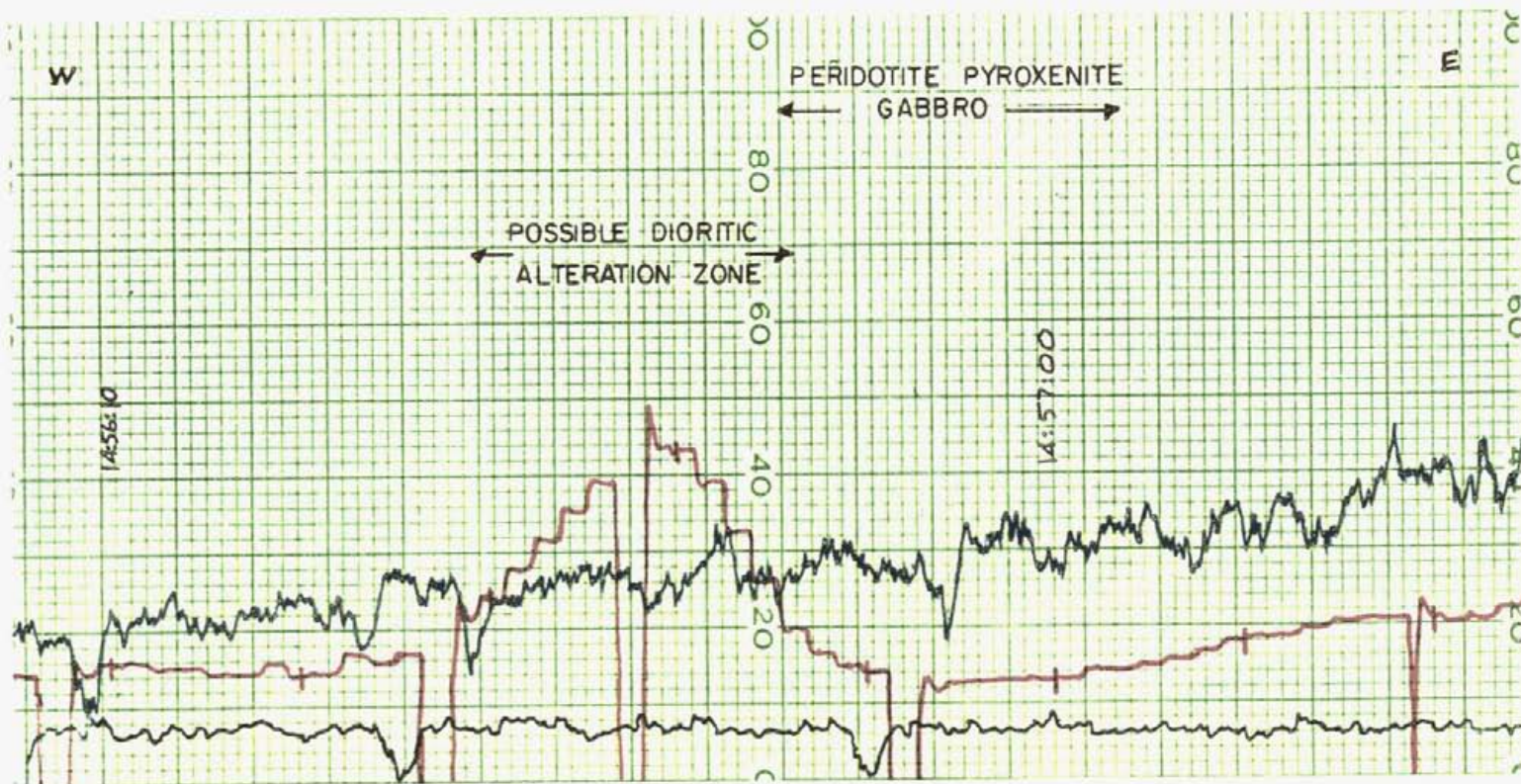
BERLE OIL CORPORATION
LINE 7

*Western
Geophysical
Service Ltd.*

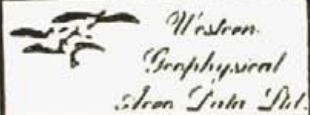
MAGNETOMETER BASE VALUE = 56600
MAGNETOMETER : VERTICAL SCALE 1cm = 200 gammas
VLF-EM : VERTICAL SCALE 1cm = 10%

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

FIG. 4

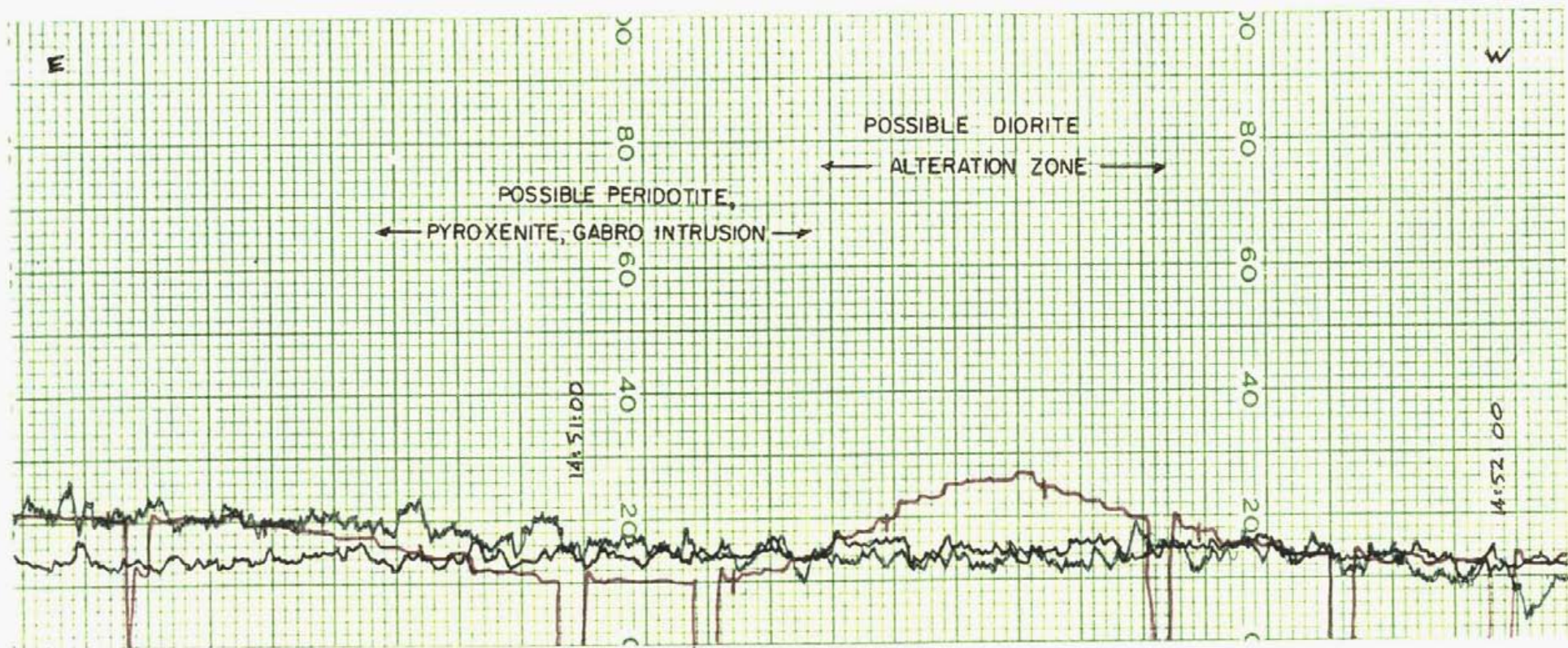


BERLE OIL CORPORATION
LINE 11

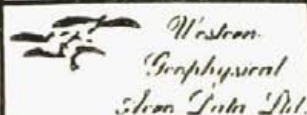


MAGNETOMETER BASE VALUE = 56600
MAGNETOMETER : VERTICAL SCALE 1cm = 200 gammas
VLF-EM : VERTICAL SCALE 1cm = 10%

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

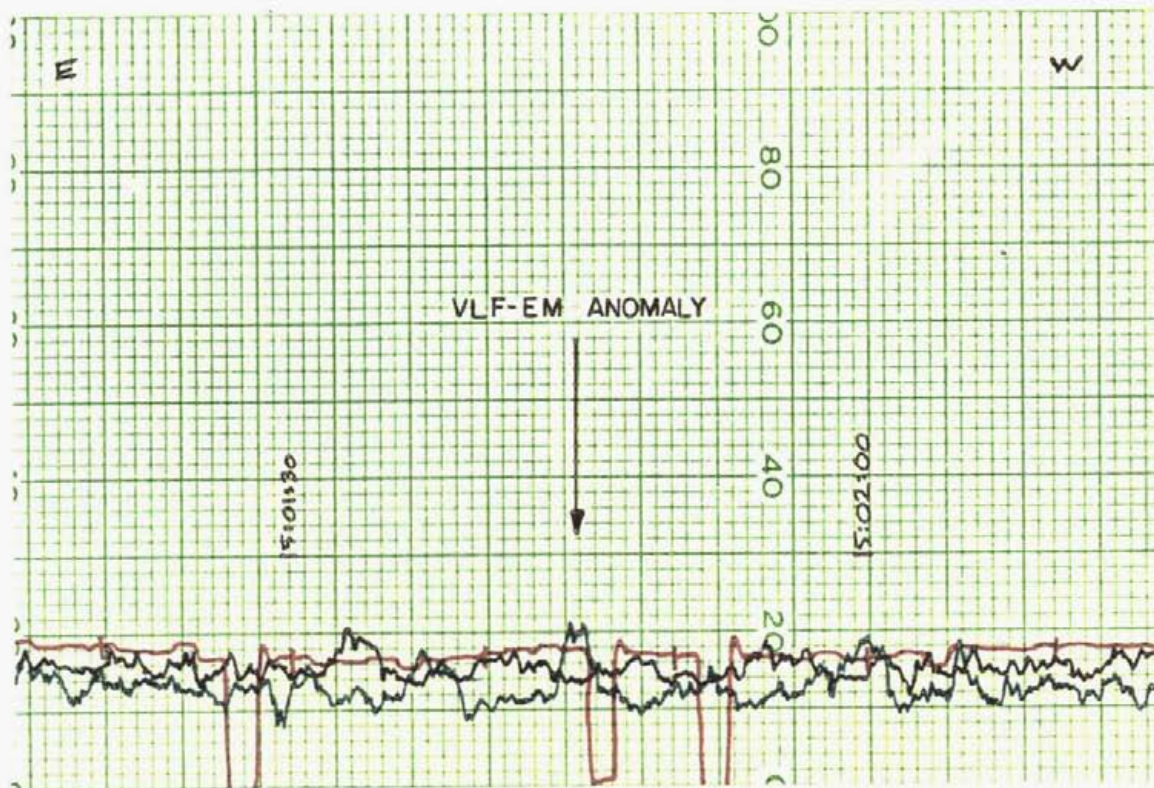


BERLE OIL CORPORATION
LINE 10

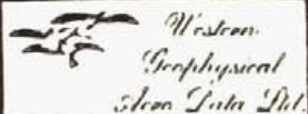


MAGNETOMETER BASE VALUE = 56600
 MAGNETOMETER : VERTICAL SCALE 1 cm = 200 gammas
 VLF-EM : VERTICAL SCALE 1 cm = 10%

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



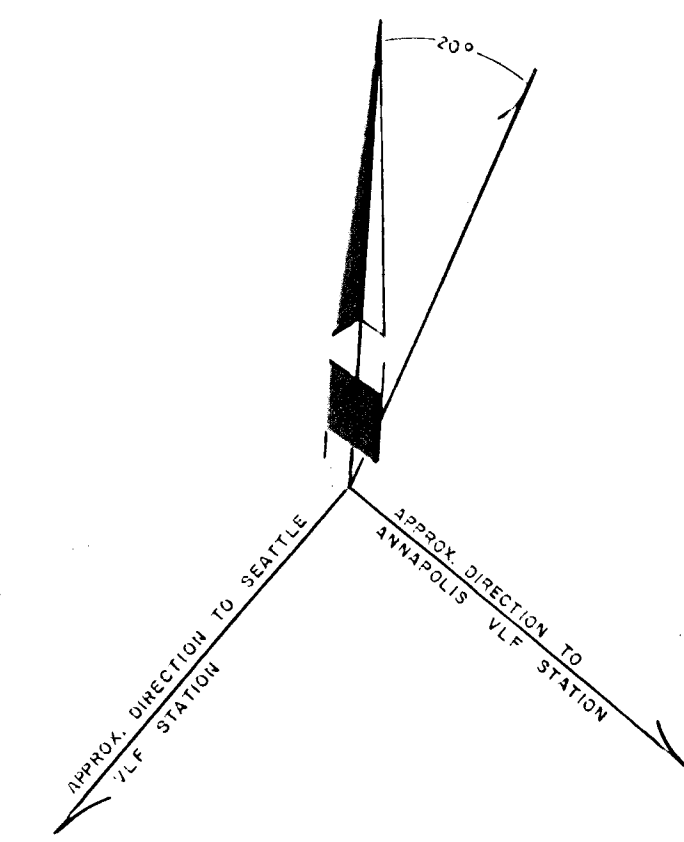
BERLE OIL CORPORATION
LINE 12



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

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

FIG. 7



LEGEND:

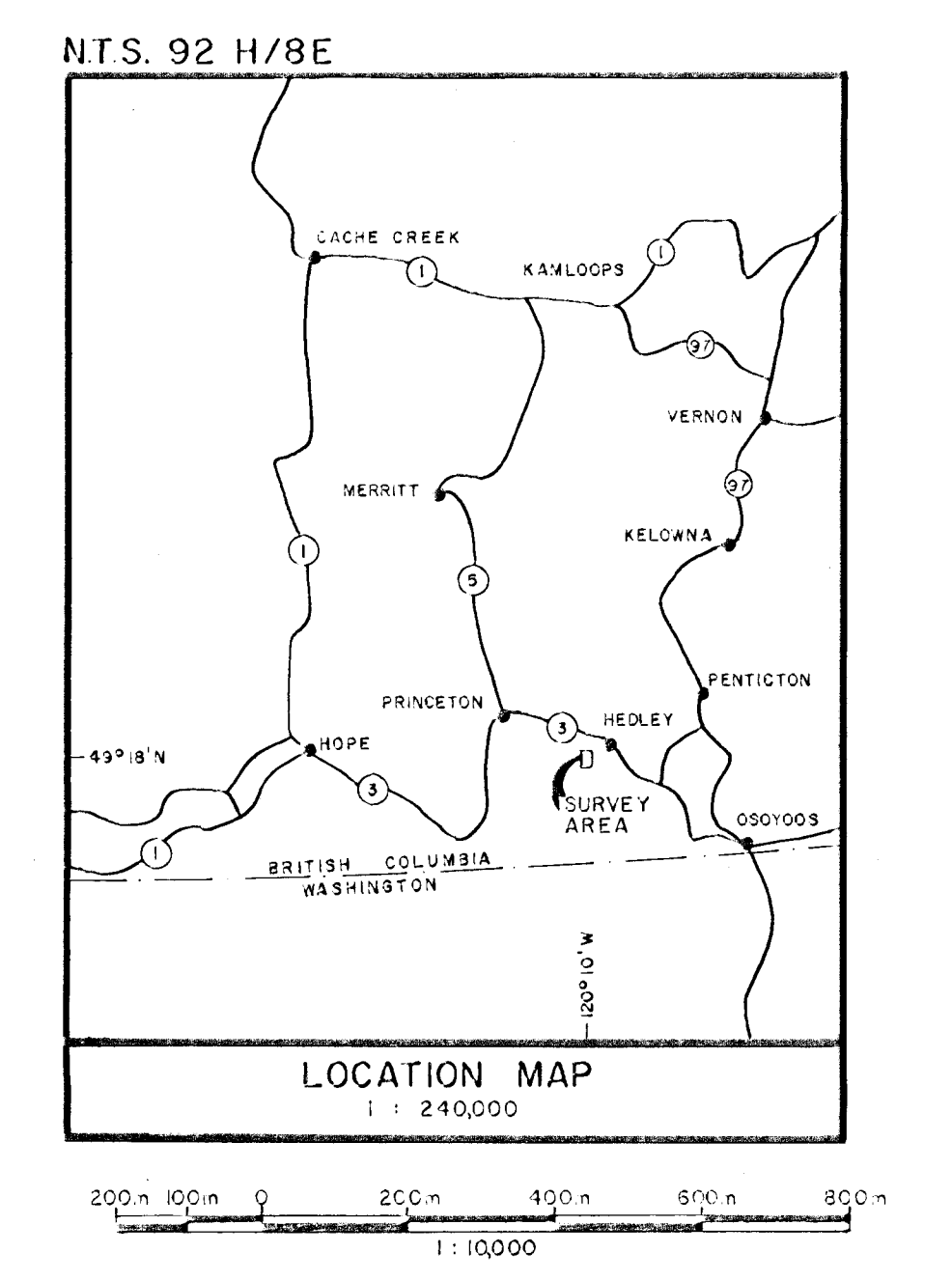
- FLIGHT LINES
- 5 SECOND INTERVAL
- CLAIM BOUNDARIES
- TOTAL FIELD MAGNETIC INTENSITY CONTOURS - 30mgauss
- VLF-EM ANOMALIES - % INCREASE ABOVE BACKGROUND
- JA CLAIM

INSTRUMENTS:

- SABRE AIRBORNE MAGNETOMETER
- SABRE AIRBORNE VLF-ELECTROMAGNETOMETER
- 1) SEATTLE, WASHINGTON - 18.6 KHz
- 2) ANNAPOLIS, MARYLAND - 21.4 KHz

MINERAL RESOURCES BRANCH
ASSESSMENT AGENCY
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part 2
of 2



BERLE OIL CORP.
JA CLAIM
SIMILKAMEEN MINING DIVISION - BRITISH COLUMBIA

AIRBORNE MAGNETOMETER AND
VLF - ELECTROMAGNETOMETER SURVEY
GEOPHYSICAL INTERPRETATION MAP

Checked by: E.T.P.
Checked by: A.L.P.
Date: JAN/82
Sheet No. 2

W. H. WILSON
Geophysicist
Min. Tech. Div.

