DYNAMIC OIL CORP.

GEOPHYSICAL REPORT

ON AN

AIRBORNE VLF-ELECTROMAGNETOMETER
AND MAGNETOMETER SURVEY

HARLEY ONE CLAIM VICTORIA M.D.

LAT. 48°17'N LONG. 123°52'W NTS 92B/5W

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Consulting Geophysicist

DATE OF WORK: December 6, 1984

DATE OF REPORT: December 13, 1984
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## ILLUSTRATIONS

- Figure 1 - Location & Claims Map
- Figure 2 - Magnetic Intensity Contour Map
- Figure 3 - VLF-EM Profiles (Annapolis)
DYNAMIC OIL LIMITED
-HARLEY 1 CLAIM-
LOCATION & CLAIMS MAP

Fig. 1
INTRODUCTION

Western Geophysical Aero Data Ltd. was commissioned by Dynamic Oil Corp. to conduct an airborne magnetometer and VLF-electromagnetometer survey across the HARLEY ONE claim on southern Vancouver Island. This claim was originally staked to cover an area from which a grab sample was obtained in the 1960's which assayed almost 1% copper.

It was the intention of this survey to provide reconnaissance magnetic and electromagnetic information to assist a geological evaluation of the general area and delineate anomalous areas for detailed ground investigation.

PROPERTY

The property consists of the HARLEY ONE claim, record number 456, which is comprised of 20 units. This claim was recorded on December 22, 1980.

LOCATION AND ACCESS

The property is located on the Muir Creek and Tugwell Creek drainage systems, approximately 30 miles west of Victoria, B.C. The claim lies within the Victoria Mining Division and NTS 92B/5W. Approximate geographical co-ordinates are latitude 48°17'N and longitude 123°52'W.

Access to the property is via the west coast road to Muir Creek some 14 km. west of the town of Sooke and then by logging road for some 9 km. up the east Muir Creek road to the L.C.P. The property has been extensively logged and a network of logging roads provide easy vehicle access to most areas within the claim.
GENERAL GEOLOGY

"J.E. Muller gives a good description of the rocks on the southern part of Vancouver Island in his G.S.C. Report of Activities Part A Paper 77 - IA, 1977. The Eocene Metchosin volcanics and Sooke intrusions underlie the southernmost part of Vancouver Island. The Metchosin volcanics are similar in lithological composition and sequence to Upper Triassic Karmutsen volcanics. The survey area has been mapped as underlain by pillow lavas, pillow breccias and aquagene tuffs which have been intruded by the Sooke intrusions of gabro and diorite. Copper mineralization appears to be associated with crosscutting shear zones and the Sooke intrusions where the rocks have been hornblendized."

PREVIOUS WORK

The HARLEY ONE claim area was covered by a regional reconnaissance program of geochemical sampling in the 1970's. Subsequent to the staking of this claim a small program of detailed grid preparation and soil sampling was conducted on behalf of Lance Mayers by Glen E. White Geophysical Consulting and Services Ltd. in January, 1981. Eleven lines, spaced 100 metres apart, were sampled at 25 metre intervals and analyzed for copper, lead, zinc and cobalt.
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 onboard 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

The airborne magnetometer and VLF-electromagnetometer survey totalled some 59 kilometres on east-west oriented lines spaced at 200 metre intervals. A photomosaic map of the area has been used both as a guide for flight navigation and as the base map for the geophysical data presentation. The total magnetic field intensity data is presented in contour form as Figure 2 and the Annapolis, Maryland frequency VLF-EM data as profiles on Figure 3.

A definitive northwest-southeast bias is observed in the magnetic contours and is interpreted as reflecting the orientation of the dominant geological structures in the area. This hypothesis is supported by a geologically mapped anticlinal axis which lies immediately north of the HARLEY ONE claim and strikes in a similar direction.

Three levels of magnetic intensities are observed across the survey area and form northwest-southeast trending 'bands'. In the southwest corner of the grid a magnetic low (values less than 57,700 gammas) is delineated and in the northeast corner a magnetic high (values greater than 55,900 gammas) is noted. This magnetic high appears to swing gradually to the south on the easternmost ends of the survey lines. A wide band of intermediate magnetic intensities covers most of the HARLEY ONE claim. These three ranges of magnetic intensities likely reflect different lithological units but geological mapping will be required to identify the respective sources. The magnetic highs probably reflect gabbroic or dioritic intrusives (Sooke Formation) within the Metchosin volcanics (intermediate magnetic intensities). The large magnetic low is presently unexplained.

A number of localized variations are observed within the wide, central magnetic band covering the HARLEY ONE claim. One of these, a small magnetic high located near the eastern claim boundary on line 6 correlates directly with a copper, cobalt
and zinc geochemistry anomaly. Mineralization in this area is believed to be related to northeast-southwest trending shear zones, perpendicular to the observed magnetic trends. It is possible that this small magnetic high reflects a portion of a northwesterly trending intrusive body which generated northeasterly trending tension fractures. Based on this hypothesis, a larger magnetic high, elongated in the northwesterly direction and observed on lines 6-9 inclusive, could be associated with similar mineralization. The geochemical soil sampling program conducted in 1981, tested only the south-eastern most tip of this anomaly and detected minor cobalt and zinc anomalies.

Two similar magnetic features are observed at the northern end of the survey grid on the Diane One claim. The anomaly on line TLW (Tie Line West) correlates with a geologically mapped gabbro intrusion, however, neither magnetic feature is associated with any copper, lead, zinc or silver geochemical anomalies. Another magnetic high is observed in the southeast corner of the grid (line 1) but no previous exploration of this area is known of by the authors.

The Annapolis frequency VLF-EM data is presented as profiles on Figure 3. No strong anomalous responses are observed in this data, however, there are numerous weak (± 5%) amplitude variations present. These anomalies are within the noise levels typically recorded with this system. A number of different line to line correlations of these weak anomalies are possible but no dominant trends are obvious.
SUMMARY AND CONCLUSIONS

Approximately 59 kilometres of airborne magnetometer and electromagnetometer survey was flown across the area of HARLEY ONE claim on December 6, 1984 on behalf of Dynamic Oil Corp.

No direct geological evidence is available, however the magnetic intensity appears to be a physical property useful for distinguishing between the Metchosin volcanics (basalt flows) and Sooke Intrusives (gabbro and/or diorite). A large magnetic low observed in the southwest corner of the survey grid is currently unexplained however, small outcrops of tuffs and/or agglomerates have been observed in the area north of the HARLEY ONE claim and could produce this type of response.

The magnetic data clearly reflects a northwest-southeast orientation to the underlying geological structures. This correlates with the strike of an anticlinal axis geologically mapped to the north of the survey area.

The HARLEY ONE claim appears to be underlain primarily by Metchosin volcanics. A small magnetic high located in the southeast quadrant of the claim is interpreted as reflecting a gabbroic or dioritic Sooke intrusive. This magnetic anomaly correlates directly with anomalous copper, cobalt and zinc soil geochemistry values which are believed to originate from mineralization along northeasterly trending shear zones. Tension fractures from an intrusive body, such as the one interpreted from the magnetic data, could produce this geological environment.

A larger magnetic high, oriented northwest-southeast and located in the west central portion of the HARLEY ONE claim, is also interpreted as representing a Sooke intrusive. This area has not been geochemically sampled to date.

The VLF-EM data does not delineate any significant conductivity responses across the survey area.
RECOMMENDATIONS

The geochemical survey conducted in 1981 should be extended to cover the entire HARLEY ONE claim and the area should be geologically mapped. Particular attention should be afforded to the large magnetic anomaly located in the west central portion of the claim.

Based on these results, an induced polarization survey is recommended to test the geochemical anomalies to determine if suitable diamond drill targets exist.

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
- 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 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 24.8 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 in housing, mounted on helicopter skid

ii) Video Recorder:

Model: Sony SLO - 340
Power Supply: 12 volt DC / 120 volt AC (60Hertz)
Tape: Betamax ¾" 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, 75Ω 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 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 50/60Hz (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 mvolts 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.
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

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- **Helicopter & Fuel** ........................................ 1,230.00
- **Vehicle** .................................................. 80.00
- **Meals & Accommodations** .................................. 60.00
- **Photomosaic** .............................................. 300.00
- **Materials** .................................................. 50.00
- **Computer Processing** ...................................... 350.00
- **Drafting & Reproduction** .................................. 150.00

**Total** ...................................................... $4,620.00
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 Exploration Surveys Ltd.

Eleven years Consulting Geophysicist.

Active experience in all Geologic provinces of Canada.