MINING LANDS SECTION

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OPERATIONS REPORT ON

AIRBORNE GEOPHYSICAL SURVEY

IN THE

PROJECT WOLF AREA, ONTARIO

FOR

CANADIAN OCCIDENTAL PETROLEUM LTD.

BY

KENTING EARTH SCIENCES LIMITED, OTTAWA

PROJECT NO. 81058

KENTING EARTH SCIENCES LIMITED

380 HUNT CLUB ROAD, OTTAWA, ONTARIO K1G 3N3
OPERATIONS REPORT ON
AIRBORNE GEOPHYSICAL SURVEY
IN THE
PROJECT WOLF AREA, ONTARIO
FOR
CANADIAN OCCIDENTAL PETROLEUM LTD.
BY
KENTING EARTH SCIENCES LIMITED, OTTAWA
PROJECT NO. 81058

OTTAWA, CANADA
July 8, 1981.

E. J. Wilson, B.Sc.
Chief Geophysicist
(Data Processing)
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<thead>
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<th></th>
<th>Page No.</th>
</tr>
</thead>
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</tr>
<tr>
<td>2. INSTRUMENTATION</td>
<td>2</td>
</tr>
<tr>
<td>3. PRESENTATION AND PROCESSING OF DATA</td>
<td>5</td>
</tr>
</tbody>
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ACCOMPANYING THIS REPORT:

Appendices

- A - KENTING DIGITAL SURVEY SYSTEM
- B - AIRBORNE DIGITAL DATA FORMAT
- C - DATA PROCESSING FLOWCHART

Maps

- 1 ea. - Total Field isomagnetic contour map
- 2 ea. - Totem VLF Profile maps
- 2 ea. - Totem VLF Total Field contour maps

All at a scale of 1:20,000 (approximately)
1. INTRODUCTION

This report pertains to the operations on a combined airborne magnetometer and VLF-electromagnetometer survey carried out in the Project Wolf area of Ontario for Canadian Occidental Petroleum Ltd. The survey was flown on June 2, 1981 by Kenting Earth Sciences Limited geophysically equipped Canso aircraft (registration C-FJJG) based at Sudbury, Ontario.

Fourty-one traverses were flown in a north-south direction over the survey area at a spacing of 1320 feet. A mean terrain clearance of 150 to 200 feet was maintained throughout the survey. Geophysical data were acquired from a total of 224.1 line miles.

The following Kenting personnel were associated with this project:
2. INSTRUMENTATION

The Kenting Digital Survey System (KDSS) was used in the survey for data acquisition. A technical description and specifications of this unit appear in Appendix A to this report.

The airborne magnetometer was a Gulf fluxgate Mark III unit which measures total field intensity with a resolution of 1 gamma.

The VLF-EM system employed was the Totem 1A instrument manufactured by Herz Industries Ltd. and was tuned to transmitter station NAA, Cutler, Maine.
A Honeywell Radar altimeter provided terrain clearance measurements.

An AS-5 35mm continuous strip camera recorded the flight path.

All data were recorded every half second in digital form by the KDSS system. The format appears in Appendix B.

Analogue recordings, digital recording and film are flagged with numbered fiducial marks every five seconds to enable correlation.

A six channel Brush 260 analogue recording unit recorded the total field magnetometer and radar terrain clearance data in analogue form.

The quantities measured, format and scales on this recording are as follows, with the chart oriented such that fiducial numbers increase to the left.
An overlapping dual channel Brush 110 10 inch analogue recorder recorded the Totem VLF data. With the chart oriented as above the format is as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Chart Fiducials</td>
<td>increasing to left</td>
</tr>
<tr>
<td>Totem VLF total field</td>
<td>Zero 2.5 in from top 1&quot; = 10%</td>
</tr>
<tr>
<td>Totem VLF Quadrature</td>
<td>Zero 2.5 in from bottom 1&quot; = 10%</td>
</tr>
</tbody>
</table>
A time synchronized magnetic diurnal base station was run during the survey. The magnetometer was a Geo-metrics 803 and the data was logged by a KDSS. Total field magnetic readings were logged digitally every second and displayed on a 10 in. analogue chart moving at 30 cm/hour with a full scale of 100 gammas. Time is in each head scan of the digital recording and marked every 10 minutes on the analogue chart.

3. PRESENTATION AND PROCESSING OF DATA

The survey data are presented on a uncontrolled air-photo mosaic base at a scale of approximately 1:20,000. This mosaic was also used for visual navigation and flight path recovery.

The data from the two flight line directions are presented on separate maps. Aeromagnetic data is presented as contours at 10 gamma intervals only on the north-south set of lines; the Totem VLF is presented two ways: as profiles on flight lines of Total Field and Quadrature at a scale of 1 cm = 20% and as Total Field contours at an interval of 5%.
All digital data were examined and edited for spurious samples and noise.

The magnetic data have been levelled using a manual adjustment method referring to crosslines and diurnal recordings where necessary. The data were then corrected by computer and the profile-contour intercepts machine drafted and contours fair-drawn by hand.

The Totem VLF data were rescaled, lightly filtered using a low pass frequency filter (cut-off 0.13, roll-off 0.16 cycles/sample) and the quadrature on north to south and east to west lines inverted to remove the flight direction effect of the aircraft. The data were then levelled using a simple statistical technique to estimate the position of the base line and drafted in profile and contour form. A general flow of processing is found in Appendix C.

Respectfully submitted,

E. John Wilson, B.Sc.
Chief Geophysicist
(Data Processing)
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3. PRESENTATION AND PROCESSING OF DATA ............ 4

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C - DATA PROCESSING FLOWCHART

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1 ea. - Totem VLF Total Field contour map
All at a scale of 1:20,000 (approximately)
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Thirty-four traverses were flown in an east-west direction over the survey area at a spacing of 1320 feet. A mean terrain clearance of 150 to 200 feet was maintained throughout the survey. Geophysical data were acquired from a total of 222.1 line miles.

The following Kenting personnel were associated with this project:

C. Iwa - Pilot/Navigator
B. McFarlane - Pilot/Navigator
S. Rayner - Aircraft Engineer
D. Johnstone - Aircraft Engineer Assistant
I. MacDonald - Electronic Technician
R. Hakka - Data Compiler
E. J. Wilson - Chief Geophysicist (Data Processing)
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Chart</td>
<td>increasing to left</td>
</tr>
<tr>
<td>Fiducials</td>
<td></td>
</tr>
<tr>
<td>Totem VLF total</td>
<td></td>
</tr>
<tr>
<td>field</td>
<td>Zero 2.5 in from top</td>
</tr>
<tr>
<td></td>
<td>1&quot; = 10%</td>
</tr>
<tr>
<td>Totem VLF</td>
<td></td>
</tr>
<tr>
<td>Quadrature</td>
<td>Zero 2.5 in from bottom</td>
</tr>
<tr>
<td></td>
<td>1&quot; = 10%</td>
</tr>
</tbody>
</table>

All quantities increase upwards.

Top of Chart

<table>
<thead>
<tr>
<th>Channel No.</th>
<th>Parameter</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Chart</td>
<td>Radar terrain clearance</td>
<td>0 – 300 feet</td>
</tr>
<tr>
<td>6</td>
<td>Total field</td>
<td>0 – 1000 gammas</td>
</tr>
<tr>
<td>5</td>
<td>Magnetometer</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

fiducials
A time synchronized magnetic diurnal base station was run during the survey. The magnetometer was a Geometrics 803 and the data was logged by a KDSS. Total field magnetic readings were logged digitally every second and displayed on a 10 in. analogue chart moving at 30 cm/hour with a full scale of 200 gammas. Time is in each head scan of the digital recording and marked every 10 minutes on the analogue chart.

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Respectfully submitted,

E. John Wilson, B.Sc.
Chief Geophysicist
(Data Processing)
APPENDIX A

KENTING DIGITAL SURVEY SYSTEM

The Kenting Digital Survey System (KDSS) is an integrated data acquisition system developed by Kenting Earth Sciences Limited to meet the increasingly sophisticated requirements for digital airborne mineral exploration.

The system replaces discrete instruments with integrated hardware under the control of a mini computer. It replaces the analogue window spectrometer with an improved digital analysis technique and incorporates a proton magnetometer with technologically current processing circuitry. In addition, all geophysical instruments which are compatible in a multi parameter survey, together with navigation systems can be readily integrated into the KDSS.

The system not only acquires data, operates and monitors all sub-systems such as magnetometers, gamma ray spectrometers, E.M. units, radar altimeters, Doppler, but it performs computations in real time while surveying is underway.

The KDSS is a software controlled system, the basic hardware is therefore an extremely flexible recording system. It can be used to collect and record data, as a magnetic tape copying system or as a spectrum analyser. The system's function is limited only by the non-existence of a suitable program.

Typical KDSS features which will assure new efficiency levels in airborne data recording:

1) All system commands are inputted through a standard electronic keyboard thus controlling all components.
2) All data is displayed in the aircraft via a Cathode Ray Tube.
3) Exact time is recorded (to 1 second intervals) generated by a stable time base crystal clock.
4) Magnetic tape remaining in cassettes is monitored and a warning is issued as supply becomes critical.
5) Allows operator to type onto tape various verbal messages — data pertinent to flight path recovery, topography etc.
6) Information normally written on to the mag tape includes:
   Operator identification
   Time
   Date
   Camera interval in seconds
   Flight time number and direction
   Camera frame number

The KDSS has been designed with the operator in mind. Programs are stored on magnetic tape cassettes. Programs, which determine the system's function can be loaded or changed in a matter of seconds thereby directing the system to assume specific tasks.

Two identical output tape decks are incorporated to enhance data security. Data is recorded on each tape simultaneously.

Data reliability is increased by the use of read after write heads in each recording unit. Each bit of recorded data is checked against the data stored in the computer's buffer for conformance. If any data does not conform the complete data block is rechecked up to six times for each deck. Each tape deck is completely independent in its operation one from the other. All recording is done serially on one track only. With four tracks available, assuming a sample rate of 1 second, tape capacity is 8 (4 x 2) hours.

The application of mini computer technology has enabled Kenting Earth Sciences to add new dimensions to data collection and processing.
KENTING DIGITAL SURVEY SYSTEM
SPECIFICATIONS

ELECTRICAL REQUIREMENTS
Voltage — 28 VDC
Power — 400 WATTS

PHYSICAL DIMENSIONS
19" rack mounting
40 kg

PROCESSOR
CPU — Fabritek MP-12 Microprocessor
Core Memory — Random Access, 4K 12 bit words

INTERFACES
All interfacing TTL compatible, a) altimeter averaging
over the sample interval, b) heading recording, c) strip
and frame cameras.

KEYBOARD
Standard alpha-numeric, typewriter style, key pad 64
ASCII characters.

CATHODE RAY TUBE
Cybernex, 32 characters per line
16 lines per page

SPECTROMETER
256 Channels
Maximum counts — 4,096 per channel

DETECTOR PACKAGE
Manufacturer — The Harshaw Chemical Company,
Division of Kewanee Oil Company.
16" x 4" x 4"; NaI crystals, coupled to 3½" low noise
photomultiplier tubes, packaged in groups of four,
available in multiples thereof. Single assembly
resolution — less than 0.5%. Heated package
maintained at 35°C ± 1°C, 24 hours/day. Each P.M.
tube is interfaced to an amplifier co-ax driver. This
amplifier is incorporated within the driver network cap.
Coupled to each co-ax driver is a variable gain
amplifier to permit balancing of individual assemblies.
All variable gain amplifiers are connected to a
summing amplifier in which pulses are shaped and
system gain is adjusted. An input terminal is provided
to permit the injection of pulses from a nuclear pulse
generator.

SYSTEM RESOLUTION
Better than 12%.
Max Dead Time 12 microseconds
Max. Difference between energy increments 0.36 KEV.
Total spectrum is available at a connector to facilitate
spectrum display on an oscilloscope.
Window programming by digital logic.
The window positions may be automatically adjusted
to a calibration source if desired.
The count from each window is displayed on a CRT
screen.

MAGNETOMETER
Recording resolution — 0.1 gamma
Reading precision — 0.1 gamma
Operation is synchronized to data system.

ELECTROMAGNETIC SYSTEM
Provision is made for the installation of any required
E.M. system.
Noise level: Dependent on system selected.

ALTIMETER:
Dual Honeywell HG7502AC02
Accuracy + 2% at 400 ft.
Resolution 5 ft.

PULSE HEIGHT ANALYSIS
Pulses are shaped in a special circuit for best A/D
resolution.
Pulses are unipolar
Analogue to Digital Converter — Wilkinson Ramp type
12 bit BCD.

LINEARITY
Integral — Better than 0.075% over 99% of full scale.
Differential — Less than 1% deviation from mean
channel width over 99% of full scale.

POSITIONING EQUIPMENT
Doppler, VLF or any other method of positioning can
be incorporated.

ANCILLARY RECORDING CAPABILITY
16 analogue channels, resolution to 1 part in 16,000.
3 accumulator channels 0-999 counts per channel.

CAMERA
Any continuous strip or frame camera. Kenting
provides AS-5 strip, PSC Mark VII and Automax II
Frame cameras.

CONTROL LOGIC
Computer buffered. Almost any conceivable survey
system or combination of systems can be
accommodated.
APPENDIX B
AIRBORNE DIGITAL DATA FORMAT

Tape 9 track 800 BPI. ASCII code (8 Bit) Job No. 81058

One file per flight

Data distinguished by first two bytes being B0B016

Dummy binary zeros substituted for missing data distinguished by first two bytes being 000016

Message ASCII character string blocked out with binary zeros, distinguished by first two bytes being A6A616

Short data blocks at ends of lines are filled out to 774 bytes with binary zeros.

File structure

File header first block
   Job No., Tape No., File No., Flight No.

End of file - a file mark

Data Block Organization (general)

Block Header Char 1-18
   Char 1-6 = BLK No. (reset for every line)
   7-11 = Line No.
   12 = Line direction
   13-18 = Time xx hrs., xx mins., xx secs.

Data Block Format C-FJFG Record Length 774

Data Format 6 scans 21 channels at .5 second scan rate

For each scan

<table>
<thead>
<tr>
<th>CHANNEL NO.</th>
<th>LOCATION</th>
<th>CONTENTS</th>
<th>CHANNEL TYPE</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-6</td>
<td>Fiducial</td>
<td>Digital</td>
<td>.5 second</td>
</tr>
<tr>
<td>2</td>
<td>7-12</td>
<td>not used</td>
<td>&quot;</td>
<td>not used</td>
</tr>
<tr>
<td>3</td>
<td>13-18</td>
<td>Magnetometer</td>
<td>&quot;</td>
<td>1 gamma</td>
</tr>
<tr>
<td>4</td>
<td>19-24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>25-30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>31-`</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>37-`2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>43-45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>49-54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>55-60</td>
<td>not used</td>
<td>Analog</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>61-66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>67-72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>73-78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>79-84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>85-90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>91-96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>97-102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>103-108</td>
<td>Altimeter</td>
<td>8</td>
<td>1/10Ft.</td>
</tr>
<tr>
<td>19</td>
<td>109-114</td>
<td>Total Field</td>
<td>Totem VLF9</td>
<td>.25%</td>
</tr>
<tr>
<td>20</td>
<td>115-120</td>
<td>Quadrature</td>
<td>Totem VLF10</td>
<td>.25%</td>
</tr>
<tr>
<td>21</td>
<td>121-126</td>
<td>not used</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

First character in analogue channel indicates sign, followed by 5

Characters of amplitude
Line mileage costs are estimated to be $55 per mile. Total cost of survey and maps $25,000.

2. Pro Rata Share is based upon this formula:

\[
\text{No. of Participants' Claims} \times \$25,000 \\
\text{Total No. of Claims held by participants: CanadianOxy}
\]

3. The total cost of the survey is allocated as follows:

<table>
<thead>
<tr>
<th>Participant</th>
<th>No. of Claims</th>
<th>Pro Rata % Share of Line Mileage (based on Claims)</th>
<th>Pro Rata Share of Estimated Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ateba</td>
<td>136</td>
<td>17.28</td>
<td>4,320</td>
</tr>
<tr>
<td>Lynx Canada</td>
<td>80</td>
<td>10.165</td>
<td>2,541</td>
</tr>
<tr>
<td>Dejour</td>
<td>50</td>
<td>6.353</td>
<td>1,588</td>
</tr>
<tr>
<td>Corner Bay</td>
<td>50</td>
<td>6.353</td>
<td>1,588</td>
</tr>
<tr>
<td>Cons. Professor</td>
<td>31</td>
<td>3.94</td>
<td>985</td>
</tr>
<tr>
<td>CanadianOxy</td>
<td>44</td>
<td>50.32</td>
<td>12,580</td>
</tr>
<tr>
<td>Flag Oil</td>
<td>396</td>
<td>100.000</td>
<td>25,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>787</strong></td>
<td><strong>100.000</strong></td>
<td><strong>25,000</strong></td>
</tr>
</tbody>
</table>
Canadian Occidental Petroleum Limited
Suite 311
215 Carlingview Drive
REXDALE, Ont.
N9W 1X3

[ATTENTION: Mrs. M. L. Halladay]

Remit to:
KENTING EARTH SCIENCES LIMITED
380 HUN1 CLUB RD.
OTTAWA, ONTARIO K1G 3N3
CANADA

FINAL INVOICE

FOR Airborne Geophysical Survey in Sudbury

Total cost $25,000.00
Less previous payment $12,500.00
Amount due $12,500.00

TERMS: NET 30 DAY

INTEREST IS CHARGED ON OVERDUE ACCOUNTS AT 2% PER MONTH (24% PER ANNUM)
Canadian Occidental Petroleum Limited  
Suite 311  
215 Carlingview Drive  
Rexdale, Ont.  
N9W 1X8

ATTENTION: Mrs. M.L. Halladay

<table>
<thead>
<tr>
<th>CUSTOMER ORDER NO. &amp; DATE</th>
<th>KES JOB NO.</th>
<th>PACKING SLIP NO.</th>
<th>FST</th>
<th>ORST</th>
<th>JUNE, 1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>81058</td>
<td></td>
<td></td>
<td>.9%</td>
<td>included</td>
<td>N/A</td>
</tr>
</tbody>
</table>

RE: AIRBORNE GEOPHYSICAL SURVEY SUDBURY

Compilation of N-S lines

$12,500.00

REMIT TO:  
KENTING EARTH SCIENCES LIMITED  
380 HUNT CLUB RD.  
OTTAWA, ONTARIO K1G 3N3  
CANADA

INTEREST IS CHARGED ON OVERDUE ACCOUNTS AT 2% PER MONTH (24% PER ANNUM)
### The Mining Act

*Instruction:* If number of mining claims traversed exceeds space on this form, attach a list.

*Note:* Only days credits calculated in the "Expenditures" section may be entered in the "Exp. Days Cr." columns. Do not use shaded area below.

#### Special Provisions

- **Airborne - VLF, Airborne - Mag**, Canadian Occidental Petroleum Ltd., 400-150 Attwell Dr., Rexdale, Ontario M9W 6A9
  - **Survey Company:** Kenting Earth Science Ltd., Ottawa
  - **Date of Survey:** 12-6-81
  - **Total Miles of Line Cut:** 81

#### Credits Requested per Each Claim

- **Type of Survey:** Geophysical
  - **Geophysical:** Days per Claim
    - Electromagnetic: 10
    - Magnetometer: 10
    - Radiometric: 10
    - Other: 10
  - **Geological:** Days per Claim
    - Geophysical: 10
    - Geochronical: 10

#### Expenditures (including stripping)

- **Type of Work Performed:** Mining, Lands Section

#### Calculation of Expenditure Days Credits

<table>
<thead>
<tr>
<th>Mining Claim</th>
<th>Exp. Days Cr.</th>
<th>Mining Claim</th>
<th>Exp. Days Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>573.442:20</td>
<td>S</td>
<td>573.443:20</td>
</tr>
<tr>
<td>573.434:20</td>
<td></td>
<td>573.437:20</td>
<td></td>
</tr>
<tr>
<td>573.438:20</td>
<td></td>
<td>573.439:20</td>
<td></td>
</tr>
<tr>
<td>573.441:20</td>
<td></td>
<td>573.442:20</td>
<td></td>
</tr>
</tbody>
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#### Total Days Credits

- **Total number of mining claims covered by this report of work:** 44

#### Certification

- **Name and Address of Author (of Geo-Technical report):** F. J. Wilson, Kenting Earth Science Ltd., 360 Hurst Club Rd., Ottawa, Ont.

- **Certification:**
  - **Date:** Feb 18/82
  - **Holder or Agent (Signature):**
  - **Verification Report of Work:**
    - **Date Certified:** Feb 18/82
    - **Certified by (Signature):**

---

*Note: Special provisions credits do not apply to ripping.*
February 17, 1982

Mr. E.J. Wilson  
KENTING EARTH SCIENCES LTD.  
P.O. Box 8250  
Terminal P.O.  
Ottawa, Ontario  
K1G 3H7

Dear Mr. Wilson:

Re: Airborne EM and MAG-Claims S573342 et al.

I enclose maps and a covering letter from the Ontario assessment office.

As they request, please sign these airborne maps and forward directly to Mr. E.F. Anderson quoting their file #2.4553.

Thank you.

Yours truly,

R.J. Evans  
Administration Manager

RJE: ssm  
enclave
Mining Lands Comments

- Maps not agreed.

To: Geophysics

Comments

- Maps not agreed.

☑ Approved ☐ Wish to see again with corrections Date Oct 30, 1982 Signature

To: Geology - Expenditures

Comments

☐ Approved ☐ Wish to see again with corrections Date Signature

To: Geochemistry

Comments

☐ Approved ☐ Wish to see again with corrections Date Signature

☑ To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-1380)

1983 (81/10)
February 18, 1982

Fred Mathews
Supervisor Mining Lands
Room 6450, Whitney Block
99 Wellesley St. W.
Toronto, Ontario
M7A 1W3

Dear Mr. Mathews:

Please find enclosed government forms, receipts and two copies of the Airborne Geophysical Survey in the Wolf Lake project area. Please apply the credits to our 44 claims in Mackelcan and Alymer townships.

Yours respectfully,

CANADIAN OCCIDENTAL PETROLEUM LTD.

T. L. Warner
Geologist

TLW: mlf

Enclosure
Ministry of Natural Resources

GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL
TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) | Airborne VLF Mag
Township or Area | Mackelsam, Aylmer
Claim Holder(s) | Canadian Occidental Petroleum Ltd
Survey Company | Kenting Earth Science Ltd
Author of Report | E. S. Wilson
Address of Author | Kenting Earth Science Ltd 380 Hunt Club Rd, Ottawa, Ont
Covering Dates of Survey | June 2, 1981 - July 8, 1981
Total Miles of Line Cut | 

SPECIAL PROVISIONS
CREDITS REQUESTED

<table>
<thead>
<tr>
<th>Geophysical</th>
<th>DAYS per claim</th>
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<tr>
<td>Electromagnetic</td>
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<td>Magnetometer</td>
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<tr>
<td>Radiometric</td>
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<tr>
<td>Other</td>
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AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

| Magnetometer | 10 |
| Electromagnetic | 10 |
| Radiometric | 

DATE: Feb 19/82 SIGNATURE

Res. Geol. | Qualifications

Previous Surveys

<table>
<thead>
<tr>
<th>File No.</th>
<th>Type</th>
<th>Date</th>
<th>Claim Holder</th>
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TOTAL CLAIMS: 44
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<tr>
<th>Mine Claim Traversed (List in numerical sequence)</th>
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Total number of mining claims covered by this report of work: 44
SELF POTENTIAL

Instrument ___________________________________________ Range ____________________________
Survey Method ____________________________________________________________
Corrections made ____________________________________________________________

RADIO METRIC

Instrument __________________________________________________________
Values measured _____________________________________________________________
Energy windows (levels) __________________________________________________________
Height of instrument __________________________ Background Count ________________
Size of detector _____________________________________________________________
Overburden ________________________________________________________________ (type, depth - include outcrop map)

OTHERS (SEISMIC, DRILL, WELL LOGGING ETC.)

Type of survey _______________________________________________________________
Instrument _________________________________________________________________
Accuracy _________________________________________________________________
Parameters measured _________________________________________________________

Additional information (for understanding results) ________________________________

AIRBORNE SURVEYS

Type of survey(s) Airborne VLF-EM Airborne Mag _____________________________
Instrument(s) Totem IA VLF-EM Gulf Survate Mark III Magnetometer (specify for each type of survey)
Accuracy Totem IA 1% Gulf Survate Mark III 1 gamma (specify for each type of survey)
Aircraft used Camso (registration C-FL3G) ____________________________
Sensor altitude 150 - 200 feet __________________________
Navigation and flight path recovery method An AS-5 35 mm continuous strip
camera recorded the flight path __________________________
Aircraft altitude 150 - 200 feet Line Spacing 1/4 mile__________________________
Miles flown over total area 222.1 miles Over claims only 12.3 ____________________
Dear Sir:

We have received reports and maps for an Airborne Geophysical (Electromagnetic and Magnetometer) Survey on mining claims $573342 et al in the Townships of Mackelcan and Aylmer.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

J. Skura/amc

cc: Canadian Occidental Petroleum Ltd.
Rexdale, Ontario

cc: Kenting Earth SciencesLtd.
Ottawa, Ontario
Attn: E.J. Wilson
Dear Sirs:

Enclosed are airborne magnetometer and electromagnetic survey maps covering 44 mining claims Nos. 13373342 et al in the Townships of Mackelcan and Aylmer. Please have Mr. E.J. Wilson date and sign these maps and return them to this office.

Yours very truly,

E.F. Anderson
Director
Land Management Branch
Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380
F.W. Matthews:sc
Encls:

cc: Mining Recorder
    Sudbury, Ontario
HORIZONTAL CONTROL. BASED ON PHOTO LAYDOWN

LEGEND

10 GAMMA CONTOUR
50 GAMMA CONTOUR
250 GAMMA CONTOUR
MAGNETIC LOW
MEAN TERRAIN CLEARANCE.

TRAVERSE INTERVAL . . . . .
150-200 FEET
1,320 FEET

AIRBORNE MAGNETOMETER SURVEY
PROJECT WOLF AREA
ONTARIO
CANADIAN OCCIDENTAL PETROLEUM LIMITED

KANTING EARTH SCIENCES LIMITED, OTTAWA
W^10

APPROX.

HORIZONTAL CONTROL...
BASED ON PHOTO LAYDOWN CONTOUR MEAN TERRAIN CLEARANCE.
TRAVERSE INTERVAL...
5 PERCENT
I50-200 FEET...
1,320 FEET

vi H TOTAL HELD

AIRBORNE ELECTROMAGNETIC SURVEY PROJECT WOLF AREA
ONTARIO
CANADIAN OCCIDENTAL PETROLEUM LIMITED
SCALE

KENTING EARTH SCIENCES LIMITED, OTTAWA
TOTAL FIELD

SCALE IS 1 CM = 200X

DASHED LINE 15 QUADRATURE
SCALE IS 1 CM = 2070

TOTAL VLF EM PROFILES

MEAN TERRAIN CLEARANCE.

TRAVERSE INTERVAL...

150-200 FEET

- - - 1,320 FEET

AIRBORNE ELECTROMAGNETIC SURVEY

PROJECT WOLF AREA

ONTARIO

CANADIAN OCCIDENTAL PETROLEUM LIMITED

KENTING EARTH SCIENCES LIMITED, OTTAWA