

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,626

Part 4 of 4

PAID
JAN 31 1990
GOVERNMENT AGENT
VERNON
TRANS. # _____

REPORT ON
THE INTERPRETATION OF
AIRBORNE MAGNETIC AND VLF-EM SURVEY,
WHIT CLAIMS, WHITEMAN CREEK AREA,
VERNON MINING DIVISION, B.C.

0205

NTS 82L/4E

FILE NO:

CLAIM SHEET 82L/4E

LAT: 50° 13'N

LONG: 119° 39'W

FILMED

Claims: WHIT 1-18 and WHIT 20-23
Record Nos.: 18010-18027, 176, 177, 337, 338
Vernon Mining Division, British Columbia

for
Canadian Occidental Petroleum Limited Minerals
by
Frank L. Jagodits, Dipl. Eng., P. Eng., F.G.A.C.
Consulting Geophysicist

Covering Work Completed During the Period 1989

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LIST OF ACCOMPANYING MAPS

DWG. NO.	TITLE	SCALE
EIC-2211	Airborne Geophysical Survey, WHIT Claims Whiteman Creek Area, Vernon Mining Division, B.C., Interpretation Map	1:10,000

1. INTRODUCTION

Western Geophysical Aero Data Ltd. was contracted by Canadian Occidental Petroleum Limited to conduct airborne magnetic and VLF-EM surveys over the WHIT claims. The airborne work, consisting of approximately 120 line km of surveying was completed on the 1st and 2nd of May, 1989.

The WHIT claims are recorded on Claim Sheet 82 L/4E in the Vernon Mining Division, British Columbia and they are located 11.5 km west of Okanagan Lake, south of Whiteman Creek (Figure 1). The topographic location of the WHIT claims are shown on Figure 2.

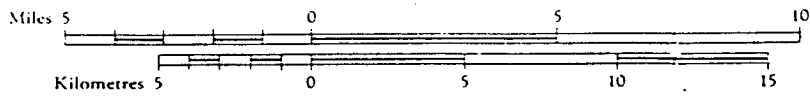
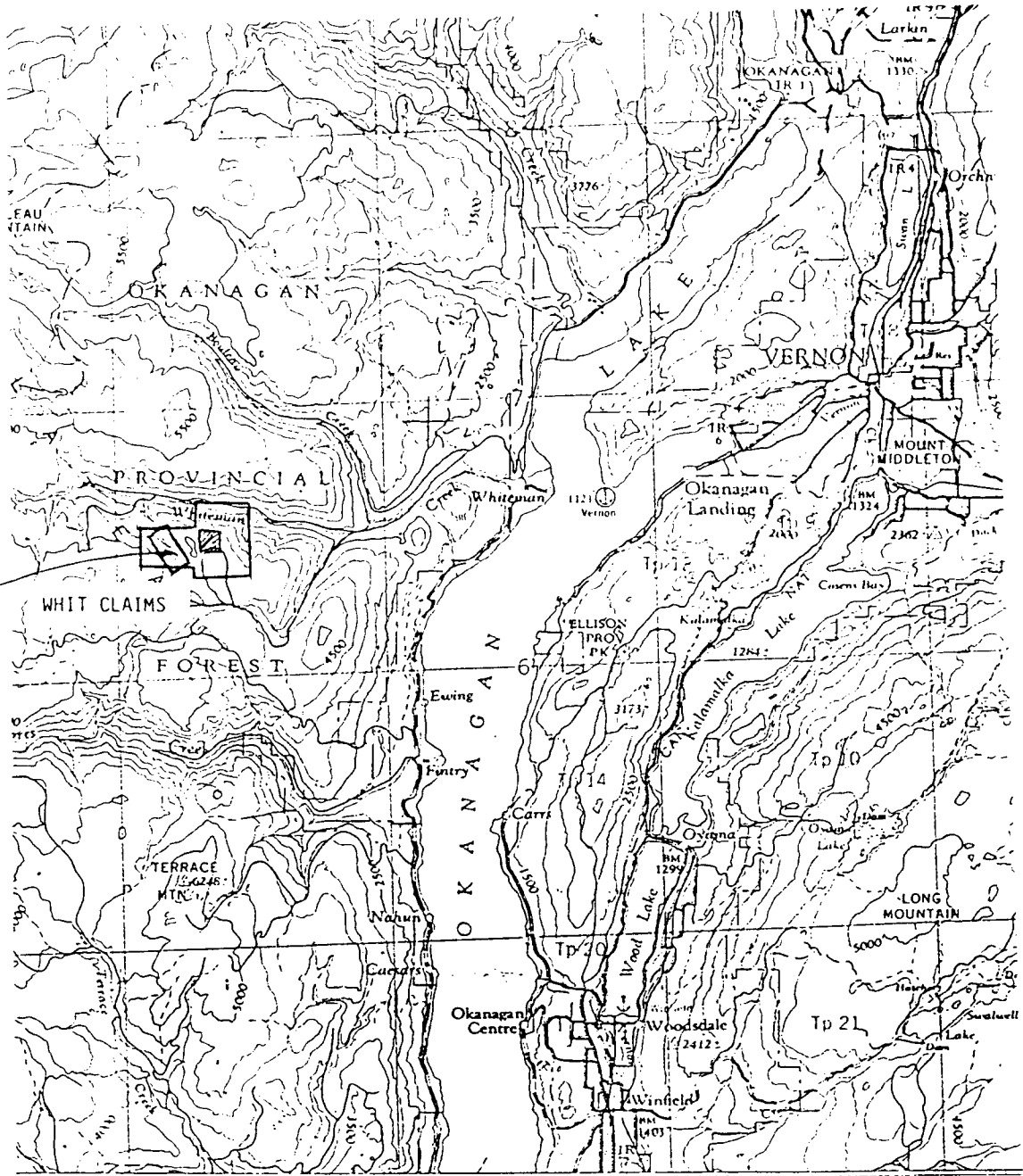
The purpose of the helicopter-borne survey was to aid exploration effort of the property by assisting the mapping of the subsurface lithology and structure. The variations of the earth's magnetic field were recorded by a Barringer proton precession magnetometer simultaneously with the total fields and quadrature components of the magnetic fields generated by VLF-EM transmitters, along east-west lines which are approximately 100 m apart. The two transmitters which were employed are: NSS, Annapolis, Maryland (frequency 21.4 kHz, azimuth: 94° , distance:



119° 30'

50° 15'

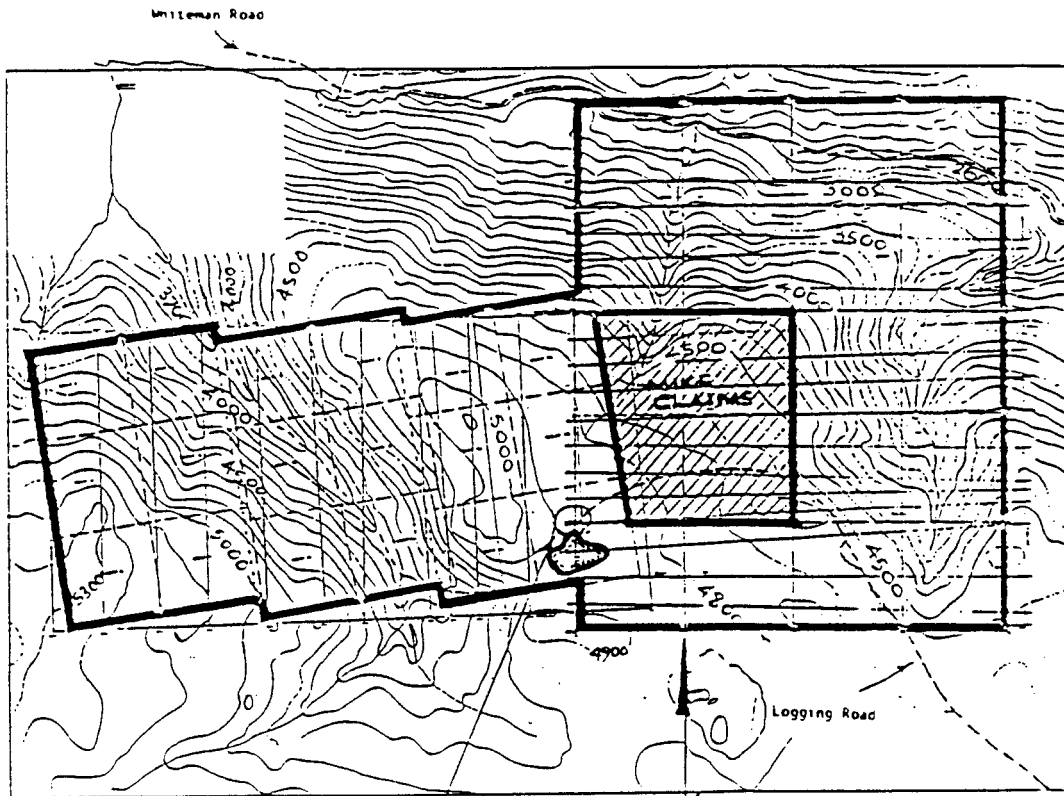
GRID "A"



LOCATION MAP

Scale..... 1 : 250,000

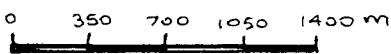
Figure 1



13.5 km to
Hwy. 18
(Westside Road)
and Whiteman

Proposed Camp Site

SCALE: 1:35,000



WHIT CLAIMS
TOPOGRAPHICAL LOCATION MAP

NTS 82 L/4E

FIGURE 2

N.S., Oct. 1988

3585 km) and NLK, Seattle, Washington (frequency: 24.8 kHz, azimuth: 217°, distance: 280 km).

The results were presented as a contour map of the total magnetic field, and as contours of the total VLF magnetic field. The two VLF contour maps also show the quadrature component in profile form. The geophysical data are given on lay-down mosaics at a scale of 1:10,000. Further details of the airborne surveys may be found in the report entitled "Technical Description of an Airborne Magnetic and VLF-EM Survey, WHIT Claims, Whiteman Creek Area, Vernon, B.C." authored by Dennis V. Woods, Ph.D., P. Eng., on behalf of Western Geophysical Aero Data Ltd., dated 29 May, 1989, prepared for Canadian Occidental Petroleum Limited.

The following report presents the interpretation of the geophysical data, which is given on an Interpretation Map, overlaying the geophysical maps.



2. DISCUSSION OF THE RESULTS

2.1 Geological Comments

The following notes were taken from a report by Namik Saracoglu, M.Sc., P. Eng., entitled "Gold and Multielement Geochemistry of the WHIT (1-18 and 20-23) Claims, dated November 15, 1988.

It is noted by Saracoglu that the property is found within an area mapped by A.G. Jones in 1956 (Vernon Map Area, G.S.C. Memoir 296) and that property was subsequently mapped by Canadian Occidental Petroleum Ltd. in 1975 and 1977 at a scale of 1:4800.

Two distinct rock groups were identified by the Canadian Occidental geologist: (a) "an older felsic intrusion, probably related to the mass of syenite shown by Jones" which is overlain by (b) "a group of younger volcanics which were mapped regionally as Tertiary (Jones)" (Saracoglu, 1988).



Two units of the felsic intrusion are described: the first is the rarely outcropping coarse grained syenite and the second is a latite porphyry. It is noted that about 80% of the property is underlain by the felsic intrusions. The Tertiary volcanics include rocks ranging in composition from felsic to mafic and outliers of volcanics were found at widely different elevations, suggesting that "they were deposited over a very rugged pre-Tertiary topography" (Saracoglu, 1988).

Few trends of joint sets were measured which is about $130^{\circ}T$, approximately parallel to the main valley in the western part of the property. Observations which were made regarding the contact between the intrusives and the Tertiary volcanics and that the tributary stream flows against the Whiteman Creek flow led Saracoglu to the suggestion that there is "a post-volcanic fault along the linear tributary stream" (Saracoglu, 1988).

It was noted that pyrite is locally abundant and occurs both in altered and unaltered rocks.

2.2 Magnetic Survey

The magnetic units which are shown on the interpretation

map were outlined on the basis of the varying magnetic characteristics. These features were subsequently assigned a geological identification which is based on the correlation between the known geology and the magnetic signatures.

The magnetic contour map fairly describes the known geology described earlier. Two distinct magnetic patterns are apparent:

- the majority of the survey area is covered by gently varying magnetic field depicting the felsic intrusive rocks. There are few magnetic anomalies of small amplitude which could represent a somewhat more magnetic phase of the intrusion or outliers of weakly magnetic volcanics.

- the second set of distinct magnetic patterns describe the Tertiary volcanics. One of the most distinctive representative of these occurs in the west central map area, identified as M1. The unit describes mafic composition, flatly dipping (to the west) volcanics. Units M2 and M3, located in the southeast corner are also believed to represent mafic volcanics, but their dip is not readily recognizable from the magnetic



data. The other outlined magnetic units more than likely demark outliers of volcanic rocks of intermediate to felsic composition or undifferentiated volcanics. Only a few structural inferences are made from the magnetic data. These indicate east-northeast and northwest striking faults and/or shear zones.

2.3 VLF-EM Survey

The VLF-EM responses are generated by two phenomena singularly or in combination and these are: (a) current gathering and (b) induction. In the first instance, the return current to transmitter, which seeks the paths of least resistance (conductive shears, faults, conductive contacts, etc) causes VLF-EM responses. The anomalous responses occurring over these features are very similar to those responses generated by induction. In the second case, the VLF-EM anomalies are caused by secondary electromagnetic fields induced by eddy currents in a conductor (sulphides, graphite conductive structures, etc.). It is believed that the VLF-EM responses detected by the airborne survey are mainly due to current gathering along conductive structures and contacts. The VLF transmitter located at Seattle



provides a primary electromagnetic field which is in good coupling with the conductive features striking between north-northeast and north-northwest. The responses from these structures are generally well defined along the east-west survey lines. The definition of anomalous trends caused by structures which are in good coupling with the Annapolis transmitter could be ambiguous at times because of the unfavourable flight line direction.

The two dominant strikes of the VLF-EM conductors are: (a) west-northwest to north-norhtwest and (b) north-northeast to east-northeast. Conductors striking nearly north-south are rarer, but present. Conductors VL1, VL2 and VL3 can be construed as the representative of a major, northwest striking structure occupied by the creek. It would appear that this structure subsequently may have been dislocated along nearly east-west faulting, partially represented by VL4 and Fl. The easterly branches of this structure could be represented by Conductors VL5, VL6, VL7 and VL8.

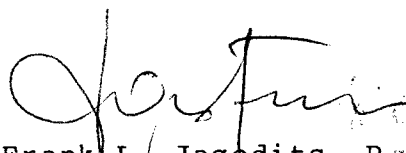


3. SUMMARY AND CONCLUSIONS

The magnetic data derived from the airborne geophysical survey have demonstrated that the survey area is underlain by generally non-magnetic intrusive rocks forming the "basement rocks". In turn these are overlain by Tertiary volcanics; the magnetic expression of these varies from anomalies of moderate amplitude to large amplitude anomalies, indicating the possible mafic composition of the volcanics.

The structural information derived from the VLF-EM data describes structural deformation along faults and/or shear zones striking from west-northwest to north-northwest and from east-northeast to north-northeast.

Respectfully submitted,



Frank L. Jagodits, P. Eng.,
Consulting Geophysicist

FLJ:sb

Oct. 23, 1989



4. APPENDIX

- Statement of Qualifications
- Cost Breakdown

CURRICULUM VITAE

NAME : Francis (Frank) L. Jagodits

RESIDENCE : 353 Berkeley St.,
TORONTO, Ontario, Canada, M5A 2X6

ACADEMIC : Elementary and Secondary education in
QUALIFICATIONS : Szombathely, Hungary

Geophysical Engineering Diploma, Technical
University of Sopron, Hungary - (1951-1956)

Post Graduate Studies in Photo-Interpretation
for Engineers, University of Toronto
Extension

WORK EXPERIENCE :

1956 Hungarian Uranium Mines, Geophysicist;
uranium exploration, supervision of field
crews, data compilation and interpretation.



1957 - 1964

Hunting Technical and Exploration Services Ltd. later Hunting Survey Corporation, Toronto, Ontario. Project Geophysicist: interpretation of airborne magnetic and radiometric surveys (mineral and oil exploration) from Latin, America, Canada and U.S.A. Shallow refraction engineering seismic surveys and interpretation.

1963 - 1964

Hunting Survey Corporation, Toronto, Manager of Gravity Operations; in charge of large scale gravity surveys in the Foothills of the Rocky Mountains and helicopter supported surveys in the Canadian Arctic Islands.

1964 - 1970

Huntec Limited, later Huntec Division of Kenting Earth Sciences Ltd., Toronto; Senior Geophysicist (1964-1967): interpretation of airborne magnetic and radiometric surveys for the U.N. (Nicaragua, Costa Rica, Panama); supervision of airborne surveys (Africa); participated in the development of the Hydrosonde marine seismic system and later conducted numerous surveys with the system.



Operations Manager (1968): responsible for all projects from negotiating to reporting, including integrated exploration programmes in Canada and Central America.

General Manager, Earth Science Department (1969): responsible for management of the Department.

Chief Geophysicist (1970): responsible for all technical aspects.

1970 - 1978

Barringer Research Ltd., Toronto; Senior Geophysicist rising to Chief Geophysicist, Manager of Airborne Operations: responsible for the Geophysical Department of the Exploration Division which conducted airborne and ground surveys for a Joint Venture in integrated exploration programmes in Canada and Fiji. Participated in the development of the E-PHASE airborne resistivity system, and later supervised and interpreted the data. As Manager of Airborne Operations organized and supervised airborne geophysical and airborne geochemical surveys.



1978 - present

Excalibur International Consultants Ltd.,
Toronto;

Consulting Geophysicist: consultant to
mining exploration companies (uranium, base
and precious metal exploration), supervised
airborne surveys and interpretations for the
U.N. (Mauritania, the Yemens), airborne
survey planning for CIDA (Honduras),
conducted geophysical seminars for mining
companies and for civil engineers. Part-time
instructor of geophysics at the Ryerson
Polytechnical Institute, Toronto.

PROFESSIONAL
AFFILIATIONS

- : - Member of the Association of Professional
Engineers of the Province of Ontario
- Society of Exploration Geophysicists
- Canadian Exploration Geophysical Society
- European Association of Exploration
Geophysicists
- Canadian-Hungarian Engineers Association
- British Columbia Geophysical Society
- Canadian Geophysical Union
- Geological Association of Canada



- Past Member, Committee on Exploration and Classification of Earth Materials, Transportation Research Board, National Research Council, USA
- Past Member, Working Group on Geoscience, Canadian Advisory Committee on Remote Sensing, Department of Energy, Mines and Resources

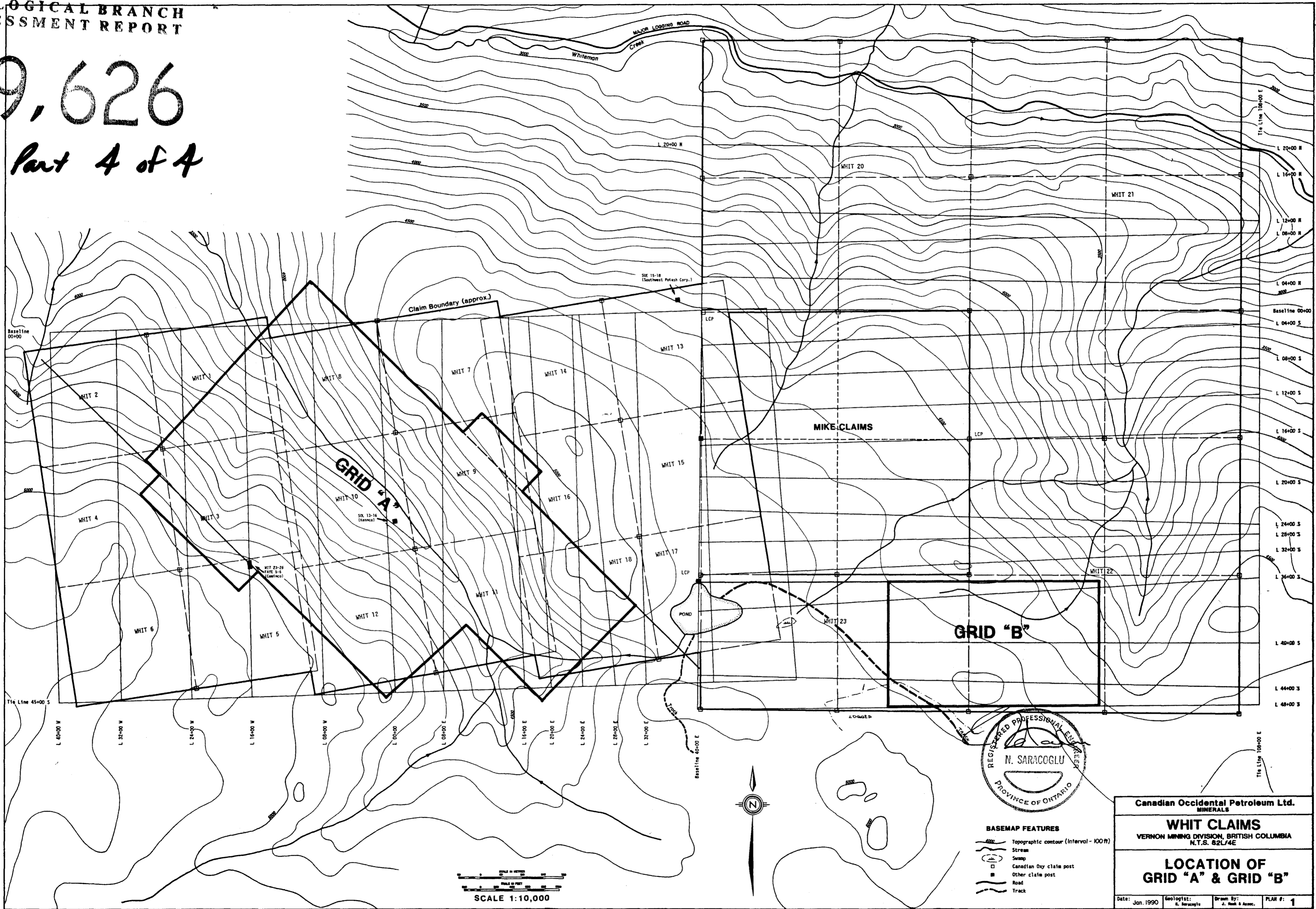


COST BREAKDOWN

Professional services by F. L. Jagodits, interpretation of the airborne data	\$1,480.00
Drafting and reproduction (\$100.00 + \$8.75)	108.75
	<hr/>
	\$1,588.75
	=====

19,626

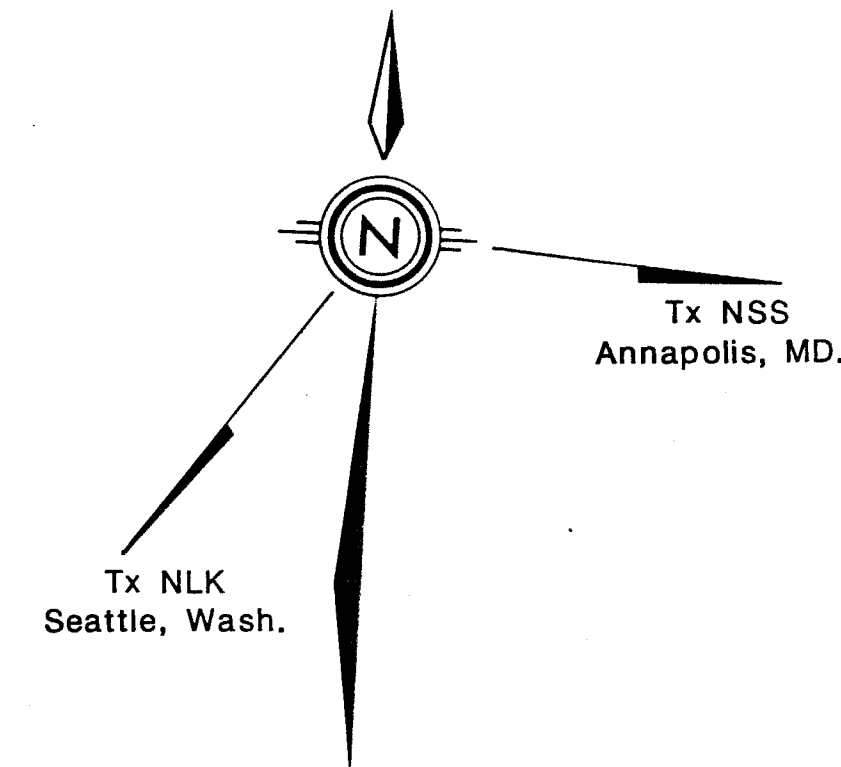
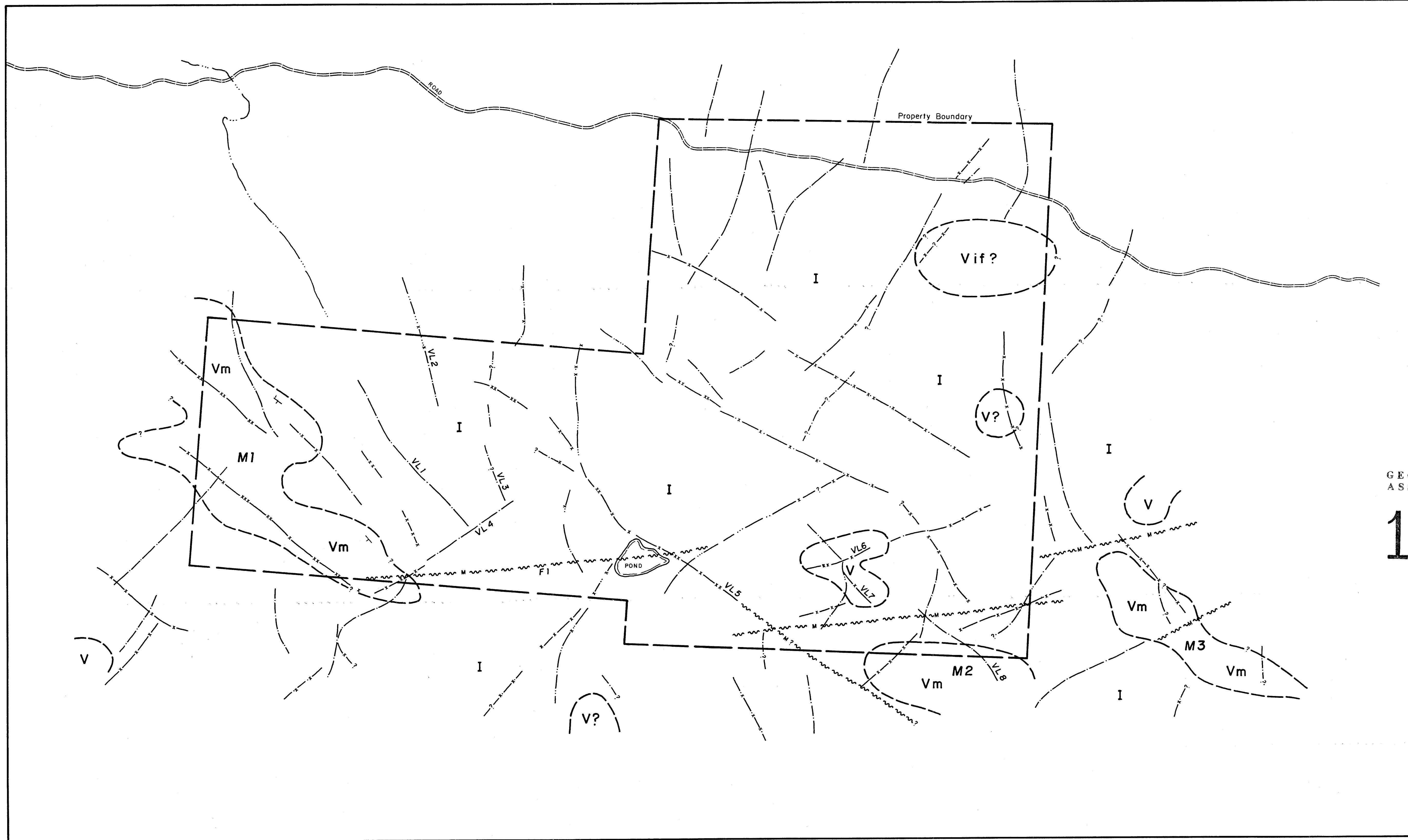
Part 4 of 4



- BASEMAP FEATURES**
- Topographic contour (Interval - 100 ft)
 - Stream
 - Swamp
 - Canadian Oty claim post
 - Other claim post
 - Road
 - Track

SCALE 1:10,000

Canadian Occidental Petroleum Ltd. MINERALS			
WHIT CLAIMS VERNON MINING DIVISION, BRITISH COLUMBIA N.T.S. 82L/4E			
LOCATION OF GRID "A" & GRID "B"			
Date: Jan. 1990	Geologist: N. Saracoglu	Drawn By: J. Reid & Assoc.	PLAN #: 1



LEGEND

- Outline of magnetic unit with identification M1
- V = Undifferentiated volcanics, m - mafic, i - intermediate, f - felsic
- I = Undifferentiated intrusives
- Interpreted fault and/or shear zone with identification F1
- M = magnetic support
- VLF-EM axis derived from the Seattle (NLK) data with identification; poor, mediocre, fair VL1
- VLF-EM axis derived from the Annapolis (NSS) data; poor, mediocre, fair VL1

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19,626

Part 4 of 4

To accompany report by
 F. E. Jagodits, Dipl. Eng., P. Eng.,

CANADIAN OCCIDENTAL PETROLEUM LIMITED	
WHIT CLAIMS, WHITEMAN CREEK AREA Vernon Mining Division, B.C.	
Airborne Geophysical Survey INTERPRETATION MAP	
SCALE 1 : 10,000	OCTOBER 1989

EXCALIBUR INTERNATIONAL CONSULTANTS LTD.
 TORONTO, CANADA