REPORT ON
GEOLOGICAL AND RADIOMETRIC SURVEYS,
CAVENDISH TOWNSHIP CLAIMS

CLAIMS: E.O. 402530 - 402572 INCL.

BONNIE LOWE

IMPERIAL OIL LIMITED

NOVEMBER 18, 1975

INTRODUCTION

In 1974, a group of 43 claims was staked in Cavendish Township by J.R. Wilson for Imperial Oil Limited. During the summer of 1975, geological and radiometric surveys were simultaneously conducted on the claim group. The results of these surveys are presented in this report. The claims covered by this report are: E.O. 402530 to 402572 inclusive.

LOCATION AND ACCESS

The claims are located in Cavendish Township, Peterborough County, Eastern Ontario Mining Division, approximately one mile west of Lake Catchacoma, and 12 miles south of Gooderham. They occupy: Concession V; lots 6,7,8,9, N½ lots 10, 11, 12,13,14, 15

Concession VI; lots 8,9,10,11,12,13, S½ lots 6,7,14,14,16

Concession VII; Lots 8,9,10,11,12,13

Access is provided from Gooderham, Ontario by Highway 507, the Picard Lake Road, and secondary logging roads (see Figure 1).

PREVIOUS HISTORY

The claim group lies adjacent to the Cavendish Uranium Mine, founded in 1955 (see Ontario Department of Mines Report, Vol. LXV, part 6, 1956 for details).

The previous operator of this claim group carried out some exploratory surface trenching and diamond drilling on the property.

GEOLOGY OF THE PROPERTY

REGIONAL GEOLOGY

The claims are situated approximately one mile to the west of the southwest flank of the Anstruther Granite Gneiss body. Metamorphosed sediments of the Grenville Supergroup underlie the area.

The foliation of the rocks in this area indicate the presence of a fold. The rocks in the eastern half of the claim group strike towards the north-northeast, while those in the western portion bear a north-northwesterly strike. The nose of the fold appears at the junction of the Squaw River and one of its tributaries. Dips are generally westerly, at a moderate angle. Geological Map No. 1957b of the Haliburton-Bancroft Area (published by the Ontario Ministry of Natural Resources) presents the geological setting of the fold in better perspective.

GEOLOGICAL SURVEY

Geological mapping was carried out on these claims from June 8, 1975 to July 31, 1975, using air photographs and chained baselines for control. Traverse lines were established 400 feet apart, by the pace and compass method, and stations on lines were flagged at 100 foot intervals and marked. The results of this survey are illustrated in Figure 2.

The claims are underlain predominantly by marble, quartzite, and quartzo-feldspathic paragneisses of the Grenville Supergroup;

amphibolitic paragneiss is present in minor amounts. Marble outcrops occupy the central portion of the claim group, and are roughly bounded by the Squaw River and another small tributary. The marble is generally white in colour, coarse grained, and relatively pure, occasionally bearing minor amounts of phlogopite, tremolite, and chondrodite.

Quartzite, and quartzo-feldspathic paragneisses dominate the southeast and southwest portions of the claim group. The quartzo-feldspathic paragneiss is the most abundant rock type, and often can be found interbanded with quartzite. The paragneiss contains varying amounts of quartz, biotite, and hornblende, while the quartzite contains minor amounts of biotite and hornblende. Amphibole-rich paragneiss occurs sporadically.

The strike of the metamorphosed sediments indicate the existence of a fold, with the nose of the fold outlined roughly by the junction of the Squaw River with one of its tributaries. The east limb of the fold strikes to the north-northeast, while the west limb of the fold strikes to the north-northwest. Dips are generally westerly at a moderate angle.

The paragneisses and marbles contain numerous pegmatite lenses of granitic composition. A large pegmatite body emerges in the marble near the nose of the fold. The pegmatite is coarse grained, pink to red in colour, and primarily composed of feldspar and quartz

with minor amounts of biotite, hornblende, pyroxene, and magnetite. Yellow secondary uranophane was observed superficially in a few old pegmatite trenches.

RADIOMETRIC SURVEY

From June 8, 1975 - July 31, 1975, a radiometric survey was carried out on the same grid used for geological mapping. Traverse lines, established by the pace and compass method, were spaced 400 feet apart with radiometric readings taken at 50 foot intervals along each line. Approximately 2,000 hundred-foot stations were flagged, covering 39 line miles of surveying. A minimum of 4,000 readings were recorded.

The survey was conducted with the McPhar TV-1 Scintillometer. Readings were plotted in total radiation counts/minute x 100 and represent the total radiation count received by the instrument at hip level. The background count in this area is 20 counts/minute x 100. Detailed operation of the instrument is described in the appendix.

The survey revealed the existence of several anomalous zones associated mainly with pegmatite ridges bounded by marble. Smaller lenses of pegmatite, in both the marble and the paragneisses, produced anomalous values of a slightly weaker nature. These zones of anomalous radioactivity are clearly marked in Figure 3, which displays the results of this survey.

RECOMMENDATIONS

Further exploration should be carried out on the zones of anomalous radioactivity to better determine the nature and extent of the anomalies outlined by this survey.

Bonnie Lowe

Bonnie Lowe

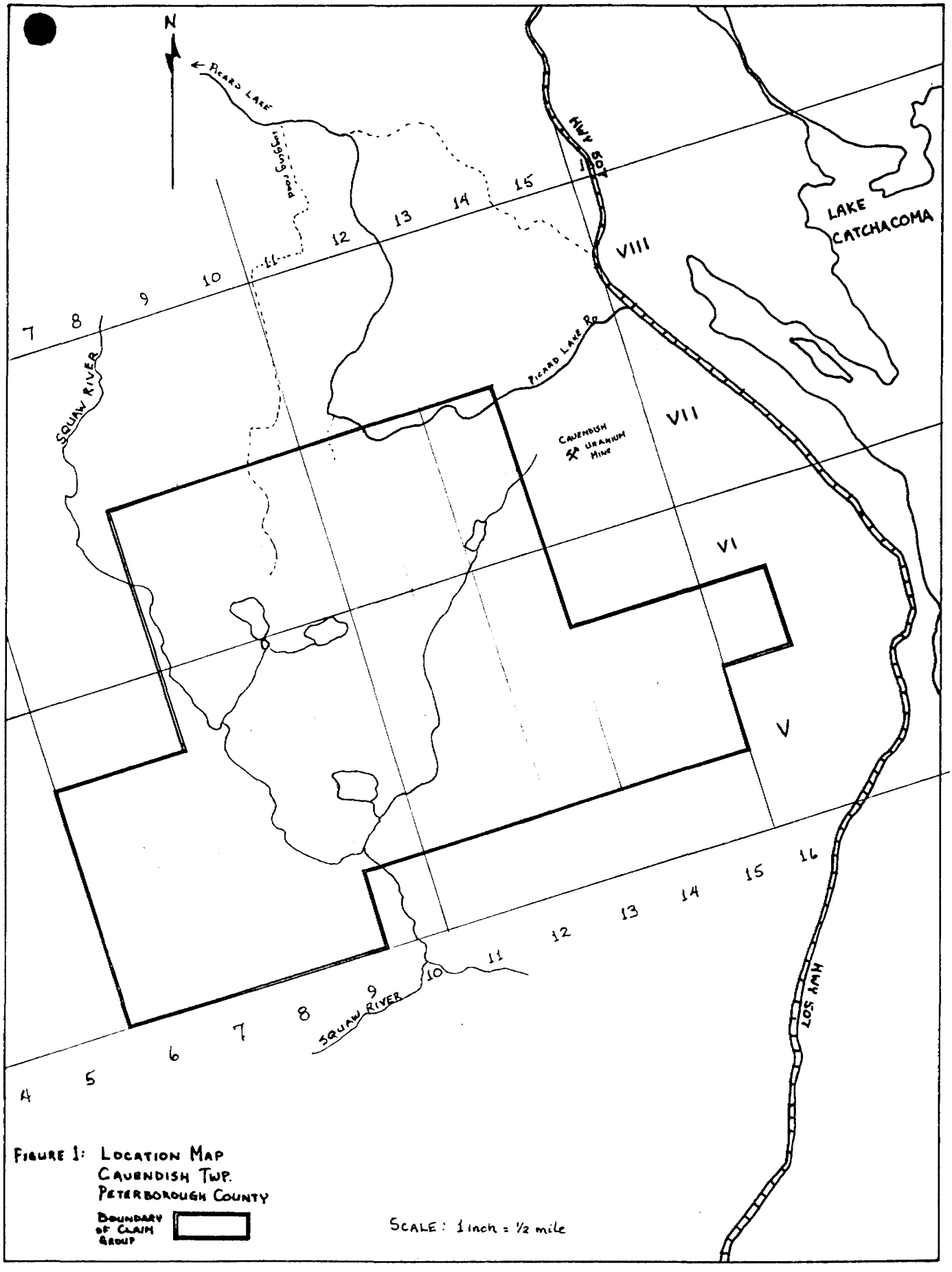


FIGURE 1: LOCATION MAP
CAVENDISH TWP.
PETERBOROUGH COUNTY

BOUNDARY OF CLAIM GROUP

APPENDIX

GENERAL DESCRIPTION AND APPLICATIONS OF THE McPHAR MODEL TV-1 GAMMA RAY SPECTROMETER

The gamma ray detecting principle lies in the sodium iodide crystal. Gamma rays entering the crystal, interact with the crystal atoms, resulting in free electrons and light emission. The optically coupled photo-multiplier converts the light emission to electrical pulses. The magnitudes of the electrical pulses bear a relationship to the energy levels of the intercepted gamma rays.

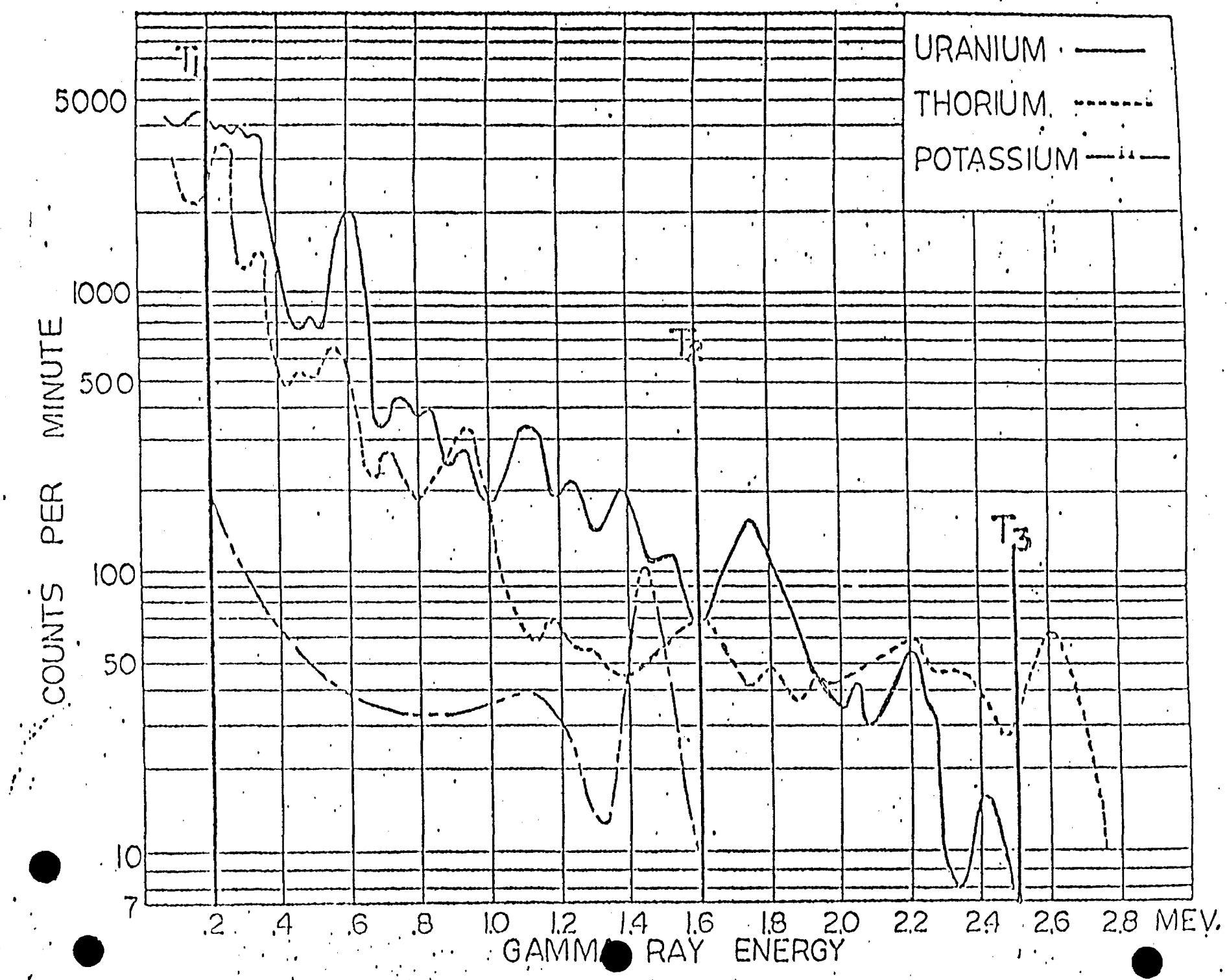
Various radioactive elements have characteristic gamma energy spectrums. The nature of the spectrum for a given element can be used to advantage in identifying it in the presence of other radioactive elements. Fig. 2 shows spectral curves for the three main elements of interest in radioactive surveys; potassium, uranium and thorium.

Thorium emits gamma rays with energy levels exceeding 2.5 Mev. The highest energy radiation from potassium is about 1.6 Mev. The three vertical lines marked T1,T2 and T3 show the location of the threshold settings of the TV-1 spectrometer after the instrument has been calibrated. Threshold T3 at 2.5 Mev. allows only those electrical pulses to be registered whose amplitudes correspond to gamma rays with energy levels above 2.5 Mev. T2 similarly responds to gamma energy levels above 1.6 Mev. When both thorium and uranium are present during a measurement, then the reading at T2 contains

counts resulting from both elements whereas T3 contains counts from thorium only.

It is possible then, to subtract the count in the T2 reading, leaving the count from uranium only. The count representing thorium in the T2 reading is a fixed multiple of the T3 reading. In the TV-1 spectrometer, this multiple is 3.5. That is, the count in T2 due to uranium is T2 - 3.5T3. A thorium calibrating source and calibration procedure, provided with the instrument, ensures that this is always the case.

RTG:rn


URANIUM
THORIUM
POTASSIUM
T1
T2
T3
5000
1000
500
100
50
10
7
COUNTS PER MINUTE
.2
.4
.6
.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8 MEV.
GAMMA RAY ENERGY

900

GEOPHYSICAL – GEOLC
TECHNICAL DA

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: Geology & Radiometric
Township or Area: Cavendish
Claim holder(s): J.R. Wilson
26 Carluke Crescent Apt. 303
Willowdale, Ontario
Author of Report: Bonnie Yvonne Lowe
Address: Imperial Oil Limited, P.O. Box 4029
Terminal A, Toronto, Ont.
Covering Dates of Survey: June 8 - July 31/75
(linecutting to office)
Total Miles of Line cut: 39

SPECIAL PROVISIONS CREDITS REQUESTED		DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	Geophysical	
	--Electromagnetic	
	--Magnetometer	
	--Radiometric	40
ENTER 20 days for each additional survey using same grid.	--Other	
	Geological	20
	Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: December 10/75 SIGNATURE: Bonnie Y. Lowe
Author of Report or Agent

PROJECTS SECTION L.D
Res. Geol. _____ Qualifications 2.1899
Previous Surveys 63.2544 Mag performed on 1969
Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix) (number)

E.O. 402530 to E.O. 402572 inclusive

E.O. 402570 not previously covered

other claims only re covered, however, as whole - large group generally well done - let go.

JRS

TOTAL CLAIMS 43

If space insufficient, attach list

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations _____ Number of Readings _____

Station interval 50 feet

Line spacing 400 feet

Profile scale or Contour intervals Continuous observation for geology
(specify for each type of survey)

(1) 40-100 cpm)
(2)>100 cpm) Contours for radiometric

MAGNETIC

Instrument _____

Accuracy - Scale constant _____

Diurnal correction method _____

Base station location _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION – RESISTIVITY

Instrument _____

Time domain _____ Frequency domain _____

Frequency _____ Range _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

_____

Corrections made _____

_____

RADIOMETRIC

Instrument McPhar TV-1

Values measured Total counts per minute

Energy windows (levels) 0.2 MeV

Height of instrument 2.5 feet Background Count 20 cpm

Size of detector 1" x 1.25" NaI

Overburden Variable 0-5 feet glacial

(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) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

_____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

Glamorgan Twp. (M-95)

Galway Twp. (M-94)

Anstruther Twp. (M-45)

Harvey Twp. (M-101)

Burleigh Twp. (M-62)

THE TOWNSHIP OF 2.2002

CAVENDISH

COUNTY OF PETERBOROUGH

EASTERN ONTARIO MINING DIVISION

SCALE: 1 INCH = 40 CHAINS

LEGEND

PATENTED LAND	Ⓟ
CROWN LAND SALE	C.S.
LEASE	Ⓛ
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	⚒
CANCELLED	C.

NOTES

This Map Is Not To Be Used
- FOR SURVEY PURPOSES -

400' Surface Rights Reservation along the shores of all lakes and rivers

For status of summer resort locations & islands please contact Ministry of Natural Resources

Original shoreline shown thus:

F.R.I. shoreline shown thus:

Patents Map shoreline shown thus:

Area shown thus [redacted] reserved for proposed Provincial Park, withdrawn from staking Sec. 34 (d) of Mining Act. File 160708

Mining claims staked in this Tp. subject to Sec. 118 of Mining Act.

SAND & GRAVEL

- (1) Gravel File. 154616
- (2) Gravel " 21547
- (3) M.N.R. Gravel Pit 76 File 21538
- (4) Gravel File 40832
- (5) Gravel " "
- (6) Gravel " 73125
- (7) Gravel " "
- (8) M.N.R. Gravel Pit No. 138 File: 152744

Areas withdrawn from staking under Section 43 of the Mining Act (R.S.O. 1970).

Order No.	File	Date	Disposition
(43) W.67/74	7598 v.4	19/12/74	S.R. & M.R.

DATE OF ISSUE DEC 16 1975

PLAN NO. - M-72

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH


CONCESSION VI
CONCESSION VII
CONCESSION V
SQUAW RIVER
SQUAW RIVER
ROAD
LOT 13
LOT 12
LOT 11
LOT 10
LOT 9
LOT 8
LOT 7
LOT 6
PRESTON

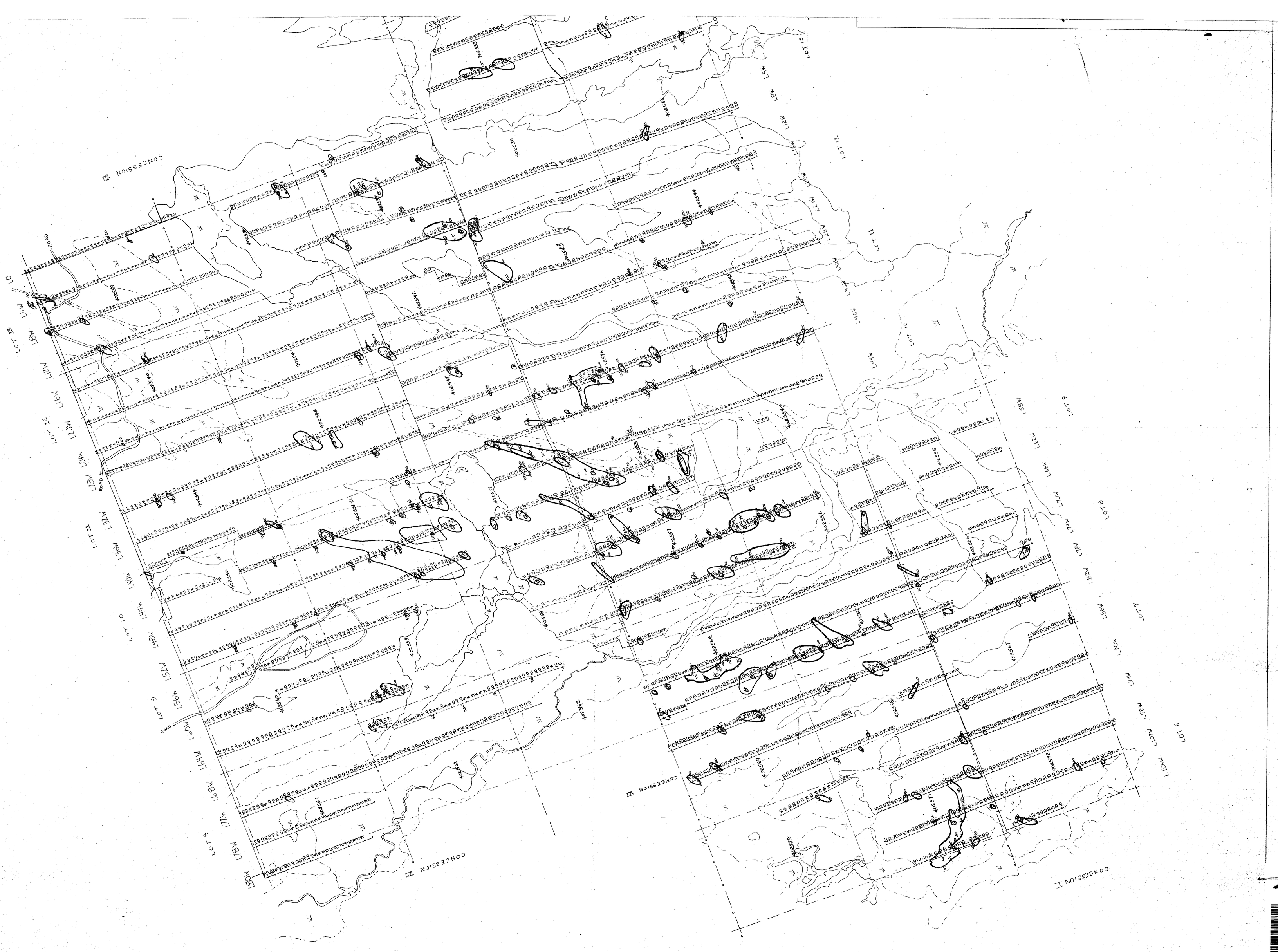

CONCESSION VII
CONCESSION VI
CONCESSION V
ROAD
LOT 12
LOT 11
LOT 10
LOT 9
LOT 8
LOT 7
L7W
L6W
L5W
L4W
L3W
L2W
L1W
L1E
L2E
L3E
L4E
L5E
L6E
L7E
L8E
L9E
L10E

FIGURE 2

IMPERIAL OIL LIMITED

CAVENDISH TOWNSHIP
TORY HILL PROSPECT

CONCESSION V, LOTS 6, 7, 8, 9
N½ OF LOTS 10, 11, 12, 13, 14, 15
CONCESSION VI, LOTS 8, 9, 10, 11, 12, 13
S½ OF LOTS 6, 7, 14, 15, 16
CONCESSION VII, LOTS 8, 9, 10, 11, 12, 13

GEOLOGICAL MAP

7	SKARN	
4	SYENITIC ROCKS	
3	GRANITIC ROCKS	a. granitic pegmatite b. coarse grained quartz pegmatite
2	PARAGNEISS	a. calcareous paragneiss b. quartzite c. feldspathic paragneisses (contain variable amounts of quartz, biotite, and hornblende) d. amphibolite e. dioritic paragneiss (hornblende-quartz; hornblende-feldspar composition)
1	MARBLE	a. phlogopite marble b. graphite marble c. tremolite-actinolite marble d. diopside marble e. siliceous marble

- Outcrop
- Strike, Strike and Dip of Foliation
- Trench, Pit
- D.D.H. Diamond Drill Hole
- Marsh, Swamp, Bog
- River, Creek
- Claim Line
- Traverse Line
- Concession and Lot Line
- Building
- Road
- Ridge, Cliff
- Geological Contact
- Angular Float

SCALE: 1 inch = 400 feet

JULY 1975
Bonnie Lowe

FIELD PARTY: B. LOWE
N. JACKSON
M. LEMMERS
D. McIVOR
J. HIRSKI

FIGURE 3

IMPERIAL OIL LIMITED

CAVENDISH TOWNSHIP
TORY HILL PROSPECT

CONCESSION V., LOTS 6, 7, 8, 9
N½ OF LOTS 10, 11, 12, 13, 14, 15
CONCESSION VI., LOTS 8, 9, 10, 11, 12, 13
S½ OF LOTS 6, 7, 14, 15, 16
CONCESSION VII, LOTS 8, 9, 10, 11, 12, 13

SCINTILLOMETER SURVEY

WITH McPHAR TV-1 SCINTILLOMETER
(SERIAL NO.'S 171-40 and 171-14)
TOTAL RADIATION SURVEY
IN COUNTS PER MINUTE (CPM)
X 100

BACKGROUND COUNT = 20 CPM × 100

40
20 — READINGS ON TRAVERSE LINE
100

CONTOURS:

- 40 - 100 CPM (x100)
- READINGS > 100 CPM (x100)

- TRAVERSE LINE
- CONCESSION AND LOT LINE
- ROAD
- BUILDING
- MARSH, SWAMP, BOG
- RIVER, CREEK

SCALE - 1 inch = 400 feet

AUGUST 1975

Bonnie Lowe