

Flux Gate Magnetometer Survey
on a Portion of the Quinterra Resources Property,
Tooms Township, Ontario

bу

William O. Karvinen, Ph.D. February 1984

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MINING LANDS SECTION

## Introduction

During June and July of 1983 Roger Poulin, in the employ of W.O.KARVINEN & Associates Ltd., carried out a vertical field magnetometer survey on 37 claims in Tooms Township belonging to Quinterra Resources Inc. of Calgary. Purpose of the survey was to assist in bedrock interpretation which is difficult in the area because of a lack of outcrops.

# Location and Access

The 37 claims, which form part of a much larger block of ground held by Quinterra in this portion of the Swayze Belt, are located in Tooms Township, approximately 90 miles southwest of Timmins and 25 miles east of Chapleau. The group is readily accessible via 10 miles of seasonal road from Kormak on the main CP Rail line (see map).

# Group Description

The group of claims surveyed with the flux gate magnetometer are as follows: P630745 to P630756 inclusive; P648669 to P648671 inclusive; P631340; P648051 to P648053 inclusive; P648664; P648676; P682167; P631359 to P631362 inclusive; P708382 and P708383; P708388 to P708394 inclusive; P708399 and P7008400. The claims are 100% owned by Quinterra Resources Inc., Suite 1120, 635 8th Ave. S.W., Calgary, Alberta.

#### Previous Work

The south east portion of the claims (P648051 to P648053; P630753 to P630756) was covered by a magnetic survey carried out by the Tooms Nickel Syndicate in 1967. This was part of the work done to examine the Cu-Ni prospect to the south. No exploration work is recorded for the remainder of the group.

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Location of Claims, Tooms Township

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Tooms Township was mapped in the early 1960's by the Provincial Government (Donovan, 1968). In 1982 the Ontario Geological Survey issued airborne EM and total intensity magnetic survey maps of the western Swayze belt which included Tooms Township.

## Present Survey

The magnitude of the vertical magnetic field was measured every 100 feet on grid lines spaced 400 feet apart. The instrument used was a flux gate magnetometer, the principles and descriptions of which are described in the appendix. Traverses were tied into base stations at intervals of about one hour so that variations of the magnetic field could be accounted for in the final data. Results are displayed as a contour map enclosed with this report.

# Interpretation of Results

Based on a 200 gamma contour interval, much of the claim group has a relatively flat magnetic expression. Exceptions are the series of high northeast-trending anomalies which cross the southeast portion of the group. These anomalies map out ultramafic intrusive rocks which outcrop in a few places to the south (e.g. Cu-Ni prospect).

A linear break in the magnetic pattern in the northeast part of the group may indicate a change in rock types (from altered to unaltered?) in the volcanic succession.

In the magnetic flat areas a general west-northwest trending pattern probably reflects the strike of the tuffs and interbedded exhalites.

#### Conclusions

The magnetic survey reveals much of the claim group to be underlain by rocks of low magnetic susceptibility (carbonatized?) and trending in a west-

northwest direction. These are intruded by a northeast striking body or bodies of ultramafic rocks. Higher magnetic susceptibilities to the north and northeast may indicate limits of the altered rocks.

February 28, 1984

Dr. William O. Karvinen

# CERTIFICATE

I, William Oliver Karvinen of 32 Lakeland Point Drive, Kingston, Ont.,

Geologist and President of W.O. KARVINEN & Associates Ltd., do hereby certify
that:

The information contained in this report is accurate and correct;

I have a net retained interest in the property described herein;

I hold a Doctorate of Philosophy and an Honours B.Sc. in geology from Queen's University (1974 and 1968) and a Master of Science in geology from the University of British Columbia (1970);

I am a fellow of the Geological Association of Canada and a member of the Canadian Institute of Mining and Metallurgy;

I personally supervised and monitored the survey described herein;

I have been actively carrying out mineral exploration and consultative services in Canada for over five years.

Kingston, Ontario

February 28, 1984

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Dr. William O. Karvinen

# APPENDIX A

Description and Specification of a Flux Gate Magnetometer

The M700 Magnetometer is a vertical field magnetometer employing the flux gate principle. The instrument is self-levelling, and a self-cancelling circuit permits rapid, accurate measurement of the earth's magnetic field from a meter, without adjustments or calculations.

The self-levelling feature of this electronic magnetometer eliminates the need for bulky tripods and time consuming find levelling procedures. Further, the instrument is practically insensitive to orientation. Errors are as low as 25 gammas for 180 degree rotation in a 15,000 gamma horizontal field.

Since the instrument can be adjusted electronically to measure vertical fields from plus 100,000 gammas to minus 100,000 gammas, there is no need for auxiliary magnets or complicated latitude adjustments.

The operation of the M700 is very simple. With the range switch at lK, the reading on the meter is set to 330 at a chosen base station by operating the latitude adjustment control. This can be done to an accuracy of 5 gammas. Next, as successive stations are occupied, the instrument is held roughly level, and the increase or decrease in the vertical component of the earth's magnetic field is read directly from the meter. Five scale ranges are available and on the most sensitive range the accuracy is 5 gammas.

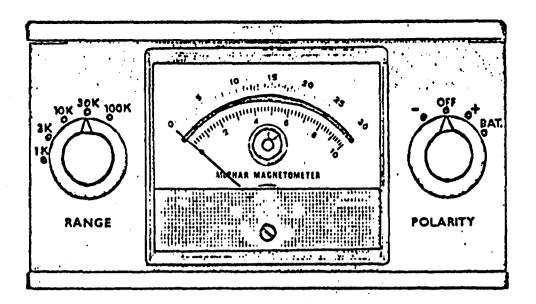
The M700 Magnetometer is the result of extensive engineering based on rugged field requirements. It incorporates the latest advances in solid state components and has built in temperature stability. The instrument provides rapid, accurate, repeatable measurements.

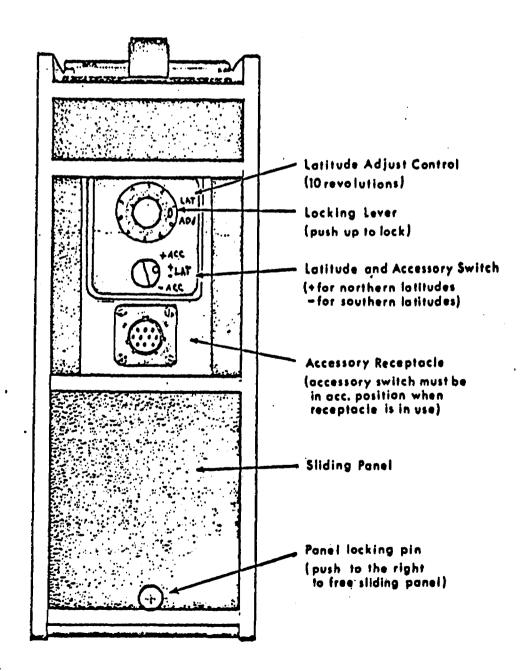
An accessory socket broadens the applications of the M700. Optional accessories available from McPhar permit the same console to be used, for example, as a base station monitor or an airborne recording magnetometer.

# SECTION 2 - SPECIFICATIONS

# 2-1 MAXIMUM SENSITIVITY

20 gammas per scale division on 1,000 gamma range. Readability is 1/4 scale division or 5 gammas.





## 2-2 MAXIMUM MEASUREMENT

Zero to ± 100,000 gammas in five ranges.

Range Switch Position	Full Scale In Gammas	Gammas Per Scale Division
lĸ	1,000	20 black scale
3K	3,000	50 red scale
10K	10,000	200 black scale
30K	30,000	500 red scale
100K	100,000	2,000 black scale

# 2-3 MEASUREMENT POLARITY

The above ranges can be reversed in polarity as a simple function of the Polarity switch.

# 2-4 LATITUDE ADJUSTMENT

The latitude adjustment permits cancelling the earth's field up to a magnitude of  $\pm$  100,000 gammas. The adjustment control is a ten revolution precision potentiometer located under the sliding side panel. A positive type locking lever on the control removes the hazard of accidentally dislodging the setting.

## 2-5 SELF-LEVELLING SENSING HEAD

The unique self-levelling sensing head of this magnetometer is inserted as a plug-in unit. It is easily detached so that the same magnetometer can be used with other types of sensing heads such as the airborne gyro stabilized head etc.

# 2-6 ORIENTATION ERROR

The orientation error is set at the factory to 25 gammas or less in the presence of a 15,000 gamma horizontal field. It is possible to adjust the orientation error and the procedure is explained in the section 7-2 under Maintenance.

#### 2-7 TEMPERATURE STABILITY

Over the temperature range of -35 to +55 degrees centigrade the temperature drift is limited to less than 50 gammas. See section 4-6 on Minimizing Temperature Drift.

## 2-8 BATTERY SUPPLY

The M700 Magnetometer is powered by two internally mounted 9 volt batteries. Any pair of the following batteries may be used:

Eveready No. 276
Mallory No. M1603
Burgess No. D6
R.C.A. No. VS306

For sub-zero operation the batteries may be transferred to an external battery case and carried under clothing to keep them from freezing. See section 6, Operation with External Batteries.

Two types of external battery cases are available. One type is for the above batteries. Another type of case will accommodate the equivalent in flashlight cells for use in countries where the normal batteries are difficult to obtain.

# 2-9 ACCESSORY RECEPTACLE

A Cannon receptacle is located on the side of the instrument under the sliding panel. This increases the versatility of the instrument so it can be used in a number of ways in addition to its normal vertical field ground magnetometer function.

# 2-10 ACCESSORY & LATITUDE SWITCH

This is a double function switch. The first function is to permit operation north or south of the equator by simply changing one step on the switch. By switching an additional step, the accessory socket is brought into connection and accessories can be applied to the instrument.

# SECTION 3 - GENERAL DESCRIPTION AND APPLICATIONS

The field sensitivity of the M700 magnetometer originates in a flux gate element mounted so that its axis of maximum sensitivity is maintained in the vertical plane. The flux gate element contains an excitation winding and a detector winding. In addition there are auxiliary windings aroung the element which carry D.C. currents. With the auxiliary windings, a D.C. flux is created to cancel the earth's field. Latitude adjust control and automatic cancelling.

The flux gate element is continuously excited between saturation levels by an A.C. current. A detector winding consisting of differentially wound coils, picks up zero voltage when the resultant D.C. flux through the elements is zero.

When the external D.C. field changes in magnitude, a corresponding phase-reversible second harmonic output voltage is produced across the detector winding. The second harmonic output voltage is fed to a phase sensitive rectifier system and used to provide a cancelling D.C. current to oppose the external field attempting to unbalance the flux gate element.

The system therefore is a self-cancelling one and at all times approximates a condition of zero flux about the flux gate element.

The D.C. current fed back to maintain the zero flux condition is measured on the display meter and is directly proportional to the change in the earth's field. The meter, then, can be calibrated directly in gammas.

Five meter ranges are provided to permit the measurement of a change of field of up to 100,000 gammas. Because the field at any new measurement station may increase or decrease, a polarity reversal on the on-off switch is provided.

The main application of the instrument is for general ground surveying. Because of the lack of any set-up requirements and the rapid direct meter read out, it provides fast and economical geophysical surveying. With the accessory receptacle the M700 lends itself to many other applications.

# 4-1 INSPECTION

After the instrument is unpacked, it should be carefully inspected for damage received during transit.

Particularly check for meter pointer damage and sensing head damage. The meter pointer can be inspected visually. To check the orientation error properly, requires an accurate turntable and controlled conditions. However, to quickly check for shipping damage, place the magnetometer on a flat surface away from any ferromagnetic material. Roate it 180 degrees. If the self-levelling arrangement in the sensing head has been damaged by severe shock, the orientation error will be several hundred gammas. If performing this check in a building, allow for the possibility of large field gradients. That is, after rotation, the magnetometer may end up in a different position and give a different reading.

It may be worthwhile mentioning at this point that, sometimes, when an instrument has been shipped some distance lying on its side, a hysteresis effect occurs on the self-levelling arrangement. The orientation error will consequently be somewhat larger than that set at the factory. This error will disappear if the instrument is allowed to stand vertical overnight.

#### 4-2 CONTROLS AND THEIR FUNCTION

There are four controls on the magnetometer and only two of these are operating controls used during the survey. For this reason, only these two controls are located on the top panel. The other two controls are located on the side of the instrument and protected by a sliding panel.

# 4-2-1 TOP PANEL CONTROLS

#### POLARITY

This is a four position switch marked -, OFF, + and BAT. When the instrument is turned to + and a meter reading is indicated, then the earth's field intensity can be read on one of the scale ranges. If, on the other hand, the meter pointer deflects to the left of zero, the switch position is moved to - to obtain a scale reading.

The fourth position is a battery test position. The battery voltage is indicated directly on the black, 0 to 10, scale of the meter.

#### RANGE

This is a five position switch that selects the read-out scale of the magnetometer. If the Range switch is in the 3K position, then full scale on the meter represents 3,000 gammas and the red, 0 to 30, meter scale is used. If the Range switch is in the 10K position, then full scale on the meter represents 10,000 gammas and the black, 0 to 10, scale is used. See section 2-2 for the complete range to meter scale relationship.

# 4-2-2 SIDE PANEL CONTROLS

## LATITUDE ADJUST

This is a ten revolution precision potentiometer with a positive type locking lever. Operation of this control varies the magnitude of a D.C. current passing through one of the auxiliary coils wound aroung the flux gate element. This current sets up a magnetic field in opposition to the earth's field.

It is possible then, to cancel the earth's field at any given location so that the magnetometer meter reads zero. This allows the use of the most sensitive scale ranges for highest reading accuracy. Vertical fields of up to ± 100,000 gammas may be cancelled in conjuction with the reversing feature of the Latitude and Accessory switch.

When the *Polarity* switch is in the - position, turning the latitude control clockwise will cause the meter pointer to move clockwise or to the right of zero.

When the + position is used the clockwise rotation of the *latitude* control will cause the meter pointer to be displaced to the left.

Note that when the *latitude* control is fully clockwise, no cancelling current is applied to the sensing head. The resulting reading obtained with the magnetometer under these conditions represents the absolute magnitude of the earth's field.

#### LATITUDE AND ACCESSORY SWITCH

This control is the one least used. It is marked t Latitude and + Accessory and - Accessory, using the abbreviations of Lat. and Acc. respectively.

The markings simply indicate that north of the equator, only the two positions marked + are used. South of the equator only the two positions marked - are used. The + Acc or -Acc positions are only employed when an accessory such as a recorder and, or, external batteries are connected to the magnetometer.

# 4-3 CANCELLING THE EARTH'S MAGNETIC FIELD

Prior to the start of a magnetic survey it is desirable to cancel out the earth's field at some chosen location which will be designated as the base station. All future measurements in the area will then remain relative to this key point.

By cancelling out the earth's background field, the more sensitive scales of the magnetometer can be used along with the greater reading accuracy available with the more sensitive ranges.

By referring back to the base station from time to time, a check on the accuracy of the survey and diurnal variations is obtained. The process of magnetic closures is also an effective control procedure. Cancelling the earth's magnetic field is a simple procedure. Rest the Magnetometer on a stump or other convenient location which is to serve as the base station site. Turn the instrument on and select a range switch position that gives an on-scale reading.

Open the leather side flap and drop the slide panel to expose the Latitude Adjust control and the Latitude and Accessory switch. Check to see that the Latitude switch is in the appropriate position, + for northern hemisphere and - for southern hemisphere.

Release the locking lever on the Latitude Adjust dial and operate the control so the meter reading decreases to 330. As 330 is approached progressively select more sensitive ranges and finally adjust for 330 on the 1000 gamma range. It is not essential to be exactly on 330. Simply record the residual reading after locking the control. Make sure the instrument is held approximately level during this adjustment or while taking the residual reading.

The instrument is now ready for the survey and all future readings will be relative to this point.

#### 4-4 TAKING A READING

Hold the instrument in both hands, slightly away from the body and both elbows pressed to the side of the body. Brace the feet slightly apart. Switch the instrument to the appropriate ON position and adjust the range switch to the most sensitive range that gives an on scale reading. Center the level bubble and while holding the instrument approximately level and steady, note the reading on the meter.

# 4-5 MINIMIZING FLUCTUATION DURING A READING

No ferrous objects such as steel belt buckles, pant zippers, pocket knives, lighters, etc., can be allowed in the vicinity of the sensing head. Such items will cause random meter fluctuations as the magnetometer moves relative to the body during a reading. Check all metal objects for magnetic effect beforehand using the magnetometer as an indicator.

There is a preferred body stance with respect to the horizontal direction of the earth's field. If the operator stands so his shoulders are roughly parallel to the direction of the earth's field, then back and forth motion of the body during a reading least affects the magnetometer. As the body moves, the sensing head, in its self-levelling suspension, is continually in motion.

The resulting angular rotation is at right angles to the horizontal field vector and results in minimum variation from this source. The use of the preferred direction is particularly effective on windy days.

# 4-6 MINIMIZING TEMPERATURE DRIFT

The temperature stability of the M700 is very good and can be of the order of ½ gamma per degree centigrade. However, where sudden large temperature changes are experienced, allow half an hour for the magnetometer to stabilize before proceeding with a survey. Failure to do this will result in all of the temperature drift occurring during the early readings.

When operating in sub-zero temperatures it is sometimes more desirable to leave the magnetometer outdoors overnight, taking only the batteries indoors. This eliminates any requirement for stabilization and the resulting temperature drift will be small.

# SECTION 5 - BATTERY TEST AND REPLACEMENT

To test the condition of the batteries, switch the *Polarity* switch to the battery test position and read the battery voltage on the black meter scale. Fresh batteries will register 9 volts or higher. Replace the batteries when the meter reads 6 volts.

To replace the batteries, first stand the instrument upside down. Loosen four captive screws on the bottom panel with the screw driver provided. Lift the bottom panel upward to expose the batteries.

Replace the batteries and fit the bottom panel carefully back into position and tighten the screws.

When the magnetometer is to lay idle for a long time, remove the internal batteries. Batteries tend to leak after a period of time resulting in corrosion.

CAUTION: Some battery manufacturers have joined the bottom of the battery to the top terminal with a steel band.

When these batteries are unwittingly used in the magnetometer, the presence of the steel so close to the sensing head, spoils the low orientation error. These batteries must be guarded against by checking fresh arrivals up against the side of the magnetometer. If they give a meter deflection of 100 gammas or more, then they have a steel conductor.

This is a rare occurrence and can be easily remedied. Have a radio serviceman slit the paper cover, cut away the steel band and replace it with a copper conductor. The paper cover is taped back together with plastic tape.

# SECTION 6 - OPERATION WITH EXTERNAL BATTERIES

External batteries are connected to the instrument through the Accessory receptacle. For the magnetometer to operate it is necessary to switch the Latitude and Accessory switch to +Acc. or -Acc. This will also disconnect the internal batteries. However, these are normally removed when an external supply is used. The internal battery connectors may be left unprotected because they are not in the circuit when the switch is in the Acc. position.

The external battery case is available from McPhar and consists of a sturdy leather case with shoulder strap, cable and mating cannon plug. It will accommodate the two type 276 Eveready Batteries that are normally mounted inside the magnetometer.

# SECTION 7 - MAINTENANCE

There is very little requirement for maintenance outside of a few points mentioned here and there throughout the instruction manual. These will be repeated here.

- 7-1 Remove the batteries when the magnetometer is to lay idle for any length of time.
- 7-2 The orientation error is set at the plant to less than 25 gammas. If with time, the error increases to about 50 gammas it can be reduced again to about 10 gammas, by placing a thin strip of steel metal on the platform below the sensing head. This requires an accurate orientation check in the absence of any large field gradient. Move the metal chip around until a spot is found where it is most effective. Pour a dab of nail polish over it to cement it in place. Larger or smaller chips may be tried until one of optimum size is found.
- 7-3 The M700 magnetometer is an instrument capable of accuracy and reliability obtainable with the finest of laboratory equipment. The chief difference is that it is a field instrument and as such it is subjected to shock and abuse that no ordinary piece of electronic equipment is called upon to withstand.

There is a limit to the abuses a field instrument can withstand. Do not contribute to them. When transporting the magnetometer in a vehicle use the transit case and stow it upright. Do what is possible to minimze vibration and shock. Instruct all personnel using the magnetometer to great it as a sensitive electronic instrument.

It has been adequately demonstrated in the past that people who adopt a responsible and careful attitude in the handling of geophysical field equipment, not onlu prolong its life, but ensure reliable results during the life of the equipment.

To open the Magnetometer for detailed inspection proceed as follows: Remove the bottom panel and disconnect the batteries. Remove the two screws on the bottom corners of the back panel. Push the back panel from within the battery compartment until the bottom of this panel is about a ½ inch above the instrument. Now, pull the panel toward the bottom of the instrument and it will come free. This exposes one side of the Magnetometer. To remove the plug-in boards, grip the side panel firmly and slide it out towards the bottom of the instrument. This exposes the edges of the plug-in boards and they can be pulled free for inspection.



Ministry of Natural Resources

Type of Survey(s)

# Report of Work

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Date Rec	corded Holder or Agent (S	Signature)	11141	Date Approved	as Recorded	Branch	mago Recorder	
Jan. 12, -84	WoKannen	1	170	1			•	
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I hereby certify that I have a or witnessed same during and					of Work anne	xed hereto, i	naving performed th	e work
Name and Postal Address of Pers								· · · · · · · · · · · · · · · · · · ·

Dr. William O. Karvinen, 32 Lakeland Point Dr., Kingston, Ont.

1984 08 30

Your File: 33-84 Our File: 2.6484

Mr. Bruce W. Hanley Mining Recorder Ministry of Natural Resources 60 Wilson Avenue Timmins, Ontario P4N 2S7

Dear Sir:

-- ...

RE: Notice of Intent dated August 10, 1984 Geophysical (Magnetometer) Survey on Mining Claims P 630745 et al in the Township of Tooms

The assessment work credits, as listed with the abovementioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block, Room 6643 Queen's Park Toronto, Ontario M7A 1W3 Phone: (416)965-4888

# D. Isherwood:mc

cc: Dr. W.O. Karvinen
32 Lakeland Point Drive
Kingston, Ontario
K7M 4E7

cc: Quinterra Resources Inc Suite 1120 635 Eighth Ave SW Calgary, Alberta T2P 3M3

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Resident Geologist Timmins, Ontario

Encl.



# Technical Assessment Work Credits

**AMENDED** 

	2.6484
Date 1984 08 10	Mining Recorder's Report of Work No.

Recorded Holder	QUINTERRA RESOURCES
Township or Area	TOOMS TOWNSHIP

Type of survey and number of	Mining Claims Assessed
Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic days	
Magnetometer	P 630745 to 756 inclusive 631340
Radiometric days	631359 to 362 inclusive 648051 to 053 inclusive
Induced polarization days	648664 648669 to 671 inclusive
Other days	648676 682167
Section 77 (19) See "Mining Claims Assessed" column	708382 - 383 708388 to 394 inclusive
Geological days	708399-400
Geochemical days	
Man days ☐ Airborne ☐	
Special provision ☑ Ground ☑	
<ul><li>Credits have been reduced because of partial coverage of claims.</li><li>Credits have been reduced because of corrections</li></ul>	
to work dates and figures of applicant.	
Special credits under section 77 (16) for the following r	nining claims
No credits have been allowed for the following mining c	laims
not sufficiently covered by the survey	Insufficient technical data filed



Cug 27/84

# **AMENDED**

1984 08 10

Your File: 33/84 Our File: 2.6484

Mr. Bruce W. Hanley Mining Recorder Ministry of Natural Resources 60 Wilson Avenue Timmins, Ontario P4N 2S7

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. R.J. Pichette at 416/965-4888.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block, Room 6643 Queen's Park . Toronto, Ontario M7A 1W3

D. Isherwood:mc

Encls.

cc: Dr. W.O. Karvinen
32 Lakeland Point Drive
Kingston, Ontario K7M 4E7

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Quinterra Resources Inc Suite 1120 635 Eighth Ave SW Calgary, Alberta T2P 3M3

cc: Resident Geologist Timmins, Ontario



# **AMENDED**

Notice of Intent for Technical Reports

1984 08 10 2.6484/33/84

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Land Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.

August 10, 1984

Your File: 33 Our File: 2.6484

Mr. Bruce W. Hanley Mining Recorder Ministry of Natural Resources 60 Wilson Avenue Timmins, Ontario P4N 2S7

Dear Sir:

RE: Letter of Approval of Credits dated July 17, 1984
Geophysical (Magnetometer) Survey on Mining Claims P 630745 et al in the Township of Tooms

The survey has been reassessed at the request of the recorded holder of the claims and a new Notice of Intent is being issued. Please disregard my letter of approval of credits dated July 19, 1984.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block, Room 6643 Queen's Park Toronto, Ontario M7A 1W3 Phone: (416)965-4888

D. Isherwood:mc

cc: Dr. W.O. Karvinen
32 Lakeland Point Drive
Kingston, Ontario
K7M 4E7

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Resident Geolggist Timmins, Ontario cc: Quinterra Resources Inc Suite 1120 635\_Eight Ave SW. Calgary, Alberta T2P 3M3

Encl.

1984 07 19

Your File: 33 Our File: 2.6484

Mr. Bruce Hanley Mining Recorder Ministry of Natural Resources 60 Wilson Avenue Timmins, Ontario P4N 2S7

Dear Sir:

RE: Notice of Intent dated June 27, 1984.
Geophysical (Magnetometer) Survey on Mining
Claims P 630745 et al in the Township of Tooms.

The assessment work credits as listed with the above mentioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block, Room 6643 Queen's Park Toronto, Ontario M7A 1W3 Phone: (416) 965-6910

D. Isherwood:sc

cc: Quinterra Resources Inc Suite 1120 635 Eighth Ave S W Calgary, Alberta T2P 3M3

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Dr. W.O. Karvinen
32 Lakeland Point Drive
Kingston, Ontario
K7M 4E7

cc: Resident Gestogist Timmins, Ontario



Recorded Holder

# Technical Assessment

QUINTERRA RESOURCES INC

	2.6484
Dete	Mining Recorder's Report of
1984 06 27	Work No. 33

471	Natural	Work Credits		2.6484
ntario	Resources	Work Oreany	1984 06 27 Min	ning Recorder's Report of ork No. 33

Township or Area TOOMS TOWNSHIP	
Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic days	P 630745 to 56 inclusive 648669 to 71 inclusive
Magnetometerdays	631340
MagnetometerDays	648051 to 53 inclusive
Radiometric days	648664
	648676 682167
Induced polarization days	631359 to 362 inclusive
Other days	708382
	708383 708388 to 394 inclusive
Section 77 (19) See "Mining Claims Assessed" column	708366 to 354 merusive
Geological days	708400
Geochemical days	
Man days ☐ Airborne ☐	
Special provision 💢 Ground 🗓	
X Credits have been reduced because of partial	
coverage of claims.	
Credits have been reduced because of corrections	·
to work dates and figures of applicant.	
•	
Special credits under section 77 (16) for the following r	mining claims
No credits have been allowed for the following mining o	laims
	Insufficient technical data filed
not sufficiently covered by the survey	misomorant technical nata man
	no behaves even tremesesse beyonge of summer of an areas



July 12/84

1984 06 27

Your File: 33 Our File: 2.6484

Mr. Bruce W. Hanley Mining Recorder Ministry of Natural Resources 60 Wilson Avenue Timmins, Ontario P4N 2S7

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. R.J. Pichette at 416/965-4888.

Yours sincerely,

S.E. Yundt Diréctor

Land Management Branch

Whitney Block, Room 6643 Queen's Park Toronto, Ontario M7A 1W3

♪D. Isherwood:mc

Encls.

cc: Quinterra Resources Inc Suite 1120 635 Eighth Avenue S W Calgary, Alberta T2P 3M3

cc: Dr. W.O. Karvinen
32 Lakeland Point Drive
Kingston, Ontario
K7M 4E7

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario



Notice of Intent for Technical Reports

1984 06 27

2.6484/33

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Land Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.



Geotechnical Report Approval

File				
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Min	ning Lands Com	ments		
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	: Geophysics	R. Shelaw		
<u> </u>				
	- Mary de Sal			01 PA-14/00/Linux
E	Approved	Wish to see again with corrections	Date Oxil 16/84	Signature
To:	: Geology - Exp	enditures		
Com	nments			
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1984 03 19

Mining Recorder
Ministry of Natural Resources
60 Wilson Ave.
Timmins, Ontario
P4N 2S7

Dear Sir:

We have received reports and maps for a Geophysical (Magnetometer) survey submitted under Special Provisions (credit for Performance and Coverage) on mining claims P 630745 et al in the Twwnship of Tooms.

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

We do not have a copy of the report of work which is normally filed with you prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block Room 6643 Queen's Park Toronto, Ontario M7A 1W3 Phone: 416/965-6918

#### A. Barr:dg

cc: Quinterra Resources Inc. Suite 1120 635 Eighth Avenue S.W. Calgary, Alberta T2P 3M3

cc: Dr. W.O. Karvinen
32 Lakeland Point Drive
Kingston, Ontario
K7M 4E7

File No 2.6484

# Mining Lands Section

# Control Sheet

TYPE OF SURVEY	GEOPHYSICAL GEOLOGICAL GEOCHEMICAL EXPENDITURE
MINING LANDS COMMENTS:	M
	REQUEST OF
W. GOOD =7 38 DAYS/	CLAIM PRORATED
AMENDED NOTICE OF IN	TENT
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L , D.	Signature of Assessor  1/08/84  Date

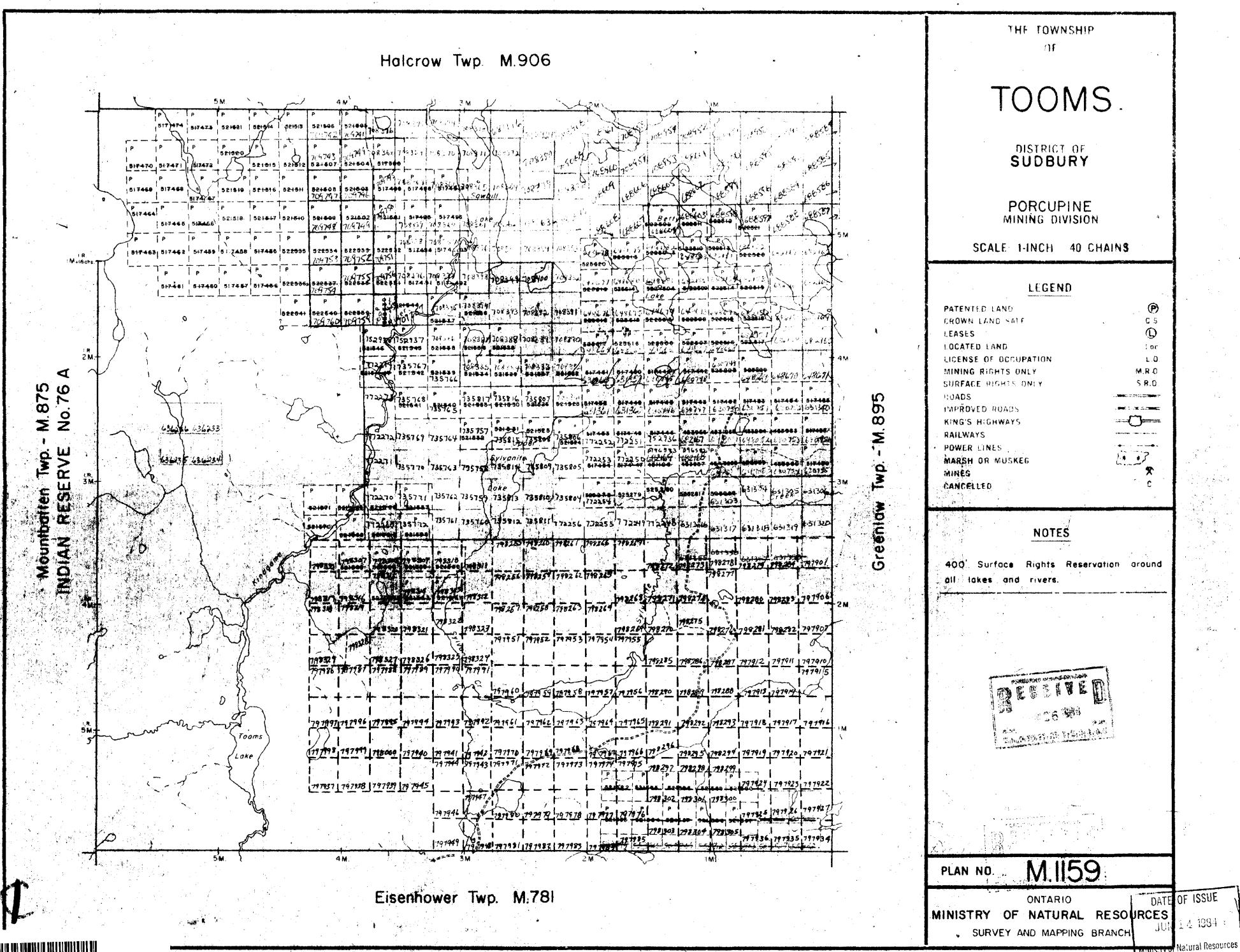
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	O. Karvinen, 32								
Credits Requested per Each (	Claim in Columns at r	<del>,</del>		aims Traversed ining Claim				<del></del>	
<b>1</b>	Geophysical	Days per Claim	Prefix	Number	Expend. Days Cr.	Prefix	fining Claim Number	Expend Days Cr	
For first survey:	- Electromagnetic		P	630745	40	P	631360	40	
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For each additional survey: using the same grid:	- Radiometric			630747	40		631362	40	
Enter 20 days (for each)	- Other		. [	630748	40	1	708382	40	
	Geological			630749	40		708383	40	
	Geochemical			630750	40		708388	40	
Man Diys	Geophysical	Days per					708389		
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and enter total(s) here	- Electromagnetic			630752	40		708390	40	
	- Magnetometer			630753	40		708391	40	
	- Radiometric			630754	40		708392	40	
	- Other			630755	40	1	708393	40	
	Geological		·	630756	40		708394	40	
	Geochemical			648669	40		708399	40	
Airtiorne Credits	1	Days per Claim		648670	40		708400	40	
Note: Special provisions	Electromagnetic			648671	40				
credits do not apply to Airborne Surveys.	Magnetometer			631340	40				
	Radiometric			648051	40			_	
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I hereby certify that I have a or witnessed same during and					t of Work annex	ed hereto,	having performed	the work	
Name and Postal Address of Pers	<del></del>			<del></del>	<del></del>		<del></del>		

Jan. 12, 1984

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