MAR 19780016: LAKE ATHABASCA

Received date: Dec 31, 1979

Public release date: Jan 01, 1981

19780016

A GEOLOGICAL EVALUATION
OF THE
BURSTALL LAKE PROJECT, ALBERTA
QUARTZ MINERAL PERMIT 6877070001
TWP. 119-121, R. 1-2, W4M (N.T.S. 74-M-8)

on behalf of
MARLINE OIL CORPORATION
CALGARY, ALBERTA

by
TAIGA CONSULTANTS LTD.
#301, 1300 - 8 St. S.W.
CALGARY, ALBERTA
T2R 1B2

DECEMBER 15, 1978

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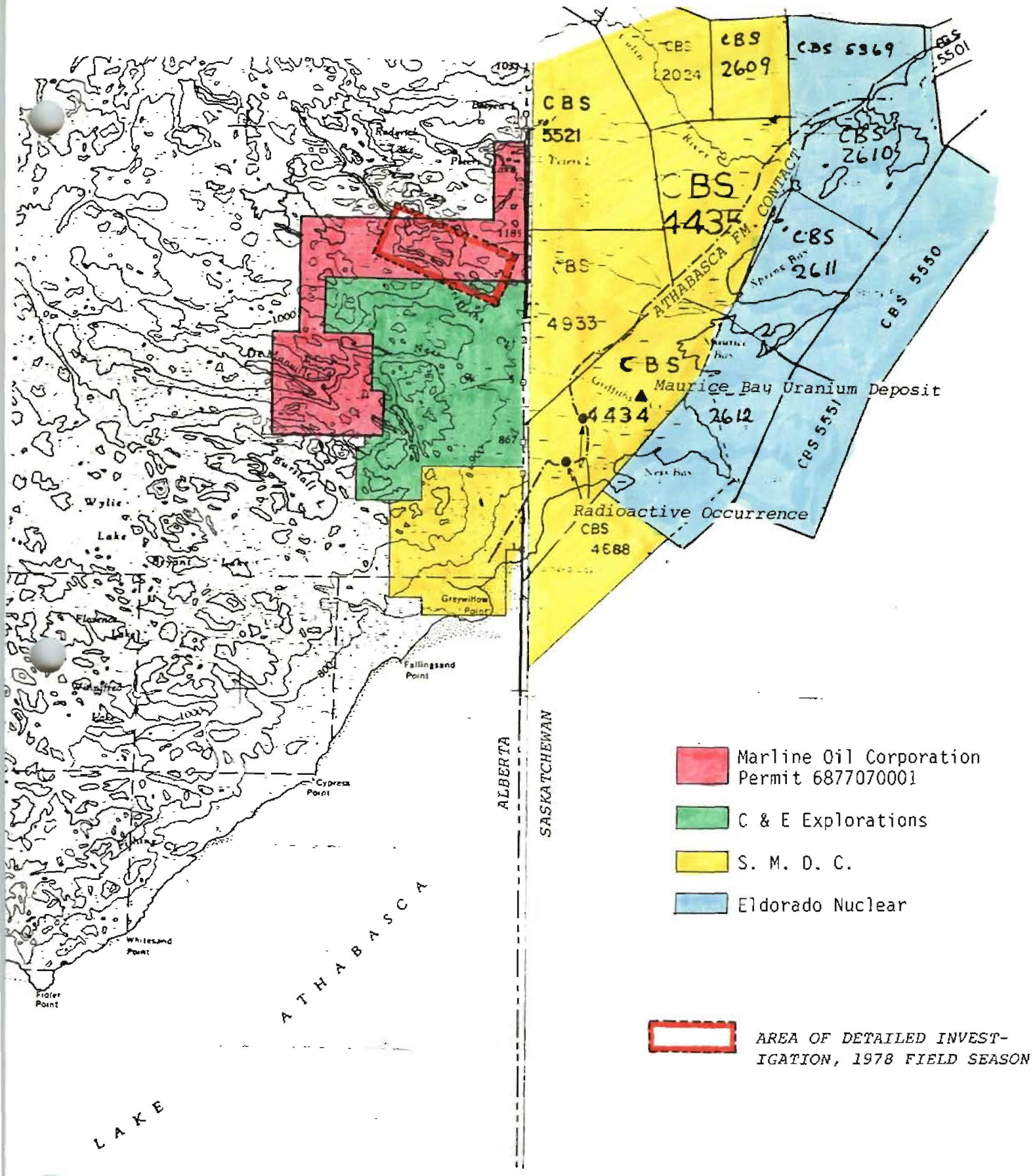
INTRODUCTION

At the request of Mr. Karl Glackmeyer of Marline Oil Corporation, Taiga Consultants Ltd. undertook a geological evaluation of the Burstall Lake Project during the period July 20 to August 18, 1978.

The field program was centered about a WNW trending set of anomalous uranium-in-lake-sediment values obtained during a 1977 geochemical sampling survey. Field work consisted of a grid emplacement for survey control (6 km of cut and chained baseline, 67.5 km of blazed and flagged crosslines), a VLF electromagnetic survey, a soil radon gas survey, soil and bedrock geochemistry, detailed prospecting, and geological mapping.

Lack of aircraft availability at the end of this program and subsequent ensuing budget limitations precluded examination of the southern sector of the Permit.



LOCATION MAP
SCALE: 1:250,000

19780016

LOCATION AND ACCESS

The Permit is located on the Alberta-Saskatchewan boundary in northeast Alberta, approximately 12 km north of Lake Athabasca. The southern boundary of the property lies along the north shore of Burstall Lake.

Access is presently restricted to float- or ski-equipped aircraft from Fort Chipewyan (102 km to the southwest), Fort Smith (112 km to the northwest), or Uranium City (86 km to the northeast).

The Maurice Bay uranium deposit of Uranerz/S.M.D.C. is located approximately 8 km S.E. of the northeast Permit boundary. Presumably, road access will be provided to Maurice Bay from Uranium City within the next couple of years.

PROPERTY DESCRIPTION

The permit consists of an irregularly-shaped block comprising 19,840 acres, and is more particularly described as follows:

TWP 119, R. 1, W4M
W½ Section 28, Sections 29 - 32 incl.

TWP. 120, R. 1, W4M
Sections 5, 6, 19-30 incl., 36.

TWP. 121, R. 1, W4M
Section 1 and S½ of Section 12.

TWP. 119, R. 2, W4M
Sections 25, 26, 35, 36.

TWP. 120, R. 2, W4M
Sections, 1, 2, 12, 13, 24, 25.

Pursuant to Alberta Quartz Mining Regulation 377/67, an assessment work performance bond of $2,000.00 ("$1,000.00 for each ten thousand acres or portion thereof...") has been posted with Alberta Energy & Natural Resources. The following excerpted sub-sections are also worthy of note:

"34.(1) The term of a permit shall be one year from the date of the permit renewable for a second term of one year upon the payment of a fee at the rate of ten cents an acre, and renewable for a third term of one year upon payment of a fee at the rate of fifteen cents an acre.

(2) With each application for renewal the permittee shall supply a report on the progress of the examination together with an estimate of the cost thereof and particulars of the extent and nature of the work to be conducted during the renewal applied for.

39. The deposit shall be refunded upon the termination of the permit if the permittee has complied with the terms and conditions thereof.

42. Prior to the termination of a permit, the permittee, if he has complied with these regulations, shall have the right to apply for a lease of quartz minerals in lands contained in the permit exclusive of any acreage that may become a Crown Reserve.

45. The term of a lease shall be twenty-one years, renewable for further terms each of twenty-one years so long as quartz minerals are being produced, subject in each case of renewal to the terms and conditions prescribed at the time the renewal is granted.

47.(1) Where a lease is acquired out of a permit the annual rental of the lease, payable yearly in advance shall be:

(a) twenty-five cents an acre for the first five years of the term of the lease, and

(b) one dollar an acre for the balance of the term and any renewal thereof."

In summary, the Permit is in good standing until the second anniversary date; that is, July 26, 1979. Assessment work expenditures are not well clarified in the Regulations; however, a minimum guideline of $1.00/acre is suggested by the Department.

Pending ammendments to the Alberta Regulations (tentatively scheduled to be promulgated in 1979) will likely increase the assessment requirements to: "(a) during the first two-year period an amount determined by multiplying the number of hectares by ten dollars.

(b) during each successive one-year work period, an amount determined by multiplying the number of hectares by five dollars."

HISTORY OF EXPLORATION

The Precambrian Shield of northeastern Alberta was mapped as the Fort Fitzgerald sheet (Map 12-1960, N.T.S. 74-L, M) at a scale of 1" to 4 miles, by G. C. Riley of the G.S.C. Detailed mapping by the Research Council of Alberta has not yet covered the Burstall Lake area.

1" to 1 mile aeromagnetic coverage was flown in 1962 (G.S.C. Map 2884G, Wylie Lake), and a 1" to 4 mile compilation map was published in 1964 (G.S.C. Map 7161G, Fitzgerald sheet).

All of the present disposition was previously held as portions of Alberta Permits No. 49, 50, 52, and 56, during the 1968-69 land rush. A cursory review of assessment data, filed with the Research Council of Alberta, is summarized below:

Permit #49 File No. U-AF-0221 (1)
Giant Explorations Limited
Report "Investigations for Radioactive Mineralization on Quartz Mineral Permit No. 49...; Alberta; August, 1978"
Sept. 6/68 E. R. Smith
-an airborne radiometric survey of 200 line miles was flown with a float-equipped Cessna 180. Instrumentation consisted of a Sharpe model GIS-2 spectrometer. The survey was flown with the instrument in the total-count mode at an average terrain clearance of 400 feet.
-three weeks of ground reconnaissance prospecting failed to indicate any significant mineralization associated with nine airborne anomalies.
-no geological mapping was reported.

Permit #50 File No. U-AF-0221 (2)
Giant Explorations Limited
Untitled report by E. R. Gayfer; Sept. 1969.
-notation of "reconnaissance flying" over the permit in conjunction with the above noted program on Permit #49.

Permit #52 File No. U-AF-024
Vision Developments Ltd.
Report "Geological Evaluation of Quartz Mineral Permits of Northeastern Alberta..." J. A. Dockery, Sept. 10, 1968.
-literature survey only.

Permit #56 File No. U-AF-027
Vision Developments Ltd.
Report "Preliminary Geological Report on Quartz Mineral Permit No. 56" R. O. MacKenzie for J. W. Worobec, June 1969.
-literature survey only.

In view of the survey and instrument specifications for the radiometric survey of Permits No. 49 and 50, the data cannot be considered reliable or useful in any form.

PHYSIOGRAPHY

Topographic relief is in the order of 250 feet about a mean elevation of 1,000' A.S.L. Bedrock is exposed over approximately 30% of the Permit area. Glacio-fluvial sand plains are extensive throughout the region.

The Permit area is densely wooded and ground access is often difficult.

Permafrost was encountered in most of the muskeg area.

The most recent ice advance was from the east-northeast as evidenced by glacial striae (boulders of Athabasca sandstone, often angular or sub-angular, are prevlaent throughout the northeast sector of the Permit and are inferred to have been derived from immediately north of Maurice Bay, Saskatchewan).

REGIONAL GEOLOGY

The northern portion of the Permit is underlain by the "Western Granodiorite Complex", a series of more or less porphyritic and foliated granitic to dioritic rocks which straddle the Alberta-Saskatchewan boundary from Lake Athabasca to the Northwest Territories. Structurally, the Complex has been folded about a northeasterly trending axis (large-scale open folds). Three main joint sets or shears, trending east to northeast, northwest, and north-south, are evident as pronounced lineaments. Metamorphic grade is of the granulite facies; however, a strong retrogressive episode is evidenced by widespread chloritization, minor epidotization and, locally, hematization.

The Complex is inferred to be Hudsonian age by the Saskatchewan Department of Mineral Resources.

F. Koster of the D.M.R., has sub-divided the Complex as follows (in decreasing order of abundance):

Megacryst Granodiorite
Granodiorite
Quartz Diorite I
Quartz Diorite II
Aplite and Pegmatite

Contacts are invariably gradational and hybrid rocks are common.

The Athabasca Formation contact is approximately 6 km east of the Alberta-Saskatchewan border (C. T. Harper, D.M.R. Prelim. Geological Map, Maurice Bay, Report 78-10). The Maurice Bay uranium deposit is located approximately 8 km southeast of the east end of the 1978 grid.

LOCAL GEOLOGY (c.f. Map 78-1, in pocket)

Within the grid area, no attempt was made to differentiate between Koster's Megacryst Granodiorite, Granodiorite, and Quartz Diorite I. No Quartz Diorite II was noted during the mapping.

In decreasing order of abundance, the following rock types were mapped:

1. Porphyroblastic Granodiorite (locally Megacryst Granodiorite) Highly variable composition from granite to granodiorite to quartz diorite. Invariably K-felspar porphyroblastic (white to pink, 1/16" to 3", generally 1/4" to 1/2"), moderately to well foliated, fine-grained to medium-grained matrix. Matrix consists of 15% to 50% (av. 20%) biotite and/or amphibole + chlorite + quartz. Porphyroblasts often aligned parallel to foliation. Weathers light pink to grey. Often contains finely disseminated pyrite and accessory magnetite.

2. Red Granite Gneiss; fine- to medium-grained; generally less well foliated than (1), often massive. Commonly less than 5% biotite ± hornblende. Dark red to light pink on weathered and fresh surface. Rarely K-feldspar porphyroblastic.

3. Pink Granite (intrusive into 1 ? Exposed on the north end of lines 36W and 37W as a 250' hill); fine- to medium-grained, light pink to grey, massive to poorly foliated, commonly 2% to 3% biotite ± hornblende.

4. Pegmatite; intrudes 1, 2, and 3; light pink to white, commonly less than 5% mafic minerals. Dikes are generally less than 5' in width and are seldom traceable for more than 50'.

5. Aplite; light orange to pink to buff-coloured; generally less than 5% mafic minerals (dominantly biotite).

On outcrop scale foliation is often intensely contorted and occasionally crenulated; jointing, joint off-sets of 1" to 6", fracturing and weak shearing are prevalent. Pegmatite dikes often exhibit boudinage structure and pull-aparts.

Fractures, joint planes, and shears are commonly chloritized; numerous epidote fracture coatings and stringers were also noted. Shearing is often accompanied by brick-red alteration of the porphyroblasts.

Contacts between units 1 and 2 are invariably gradational over meters to several tens of meters.

VLF ELECTROMAGNETIC SURVEY (c.f. Map 78-3, in pocket)

The grid area was surveyed with a Crone RADEM VLF electromagnetic unit, utilizing Cutler, Maine, as the transmitting station (frequency 17.8 KHz). Only the dip angle (the angle of inclination, measured from the horizontal in degrees, of the resultant VLF field) was measured and recorded. When plotted in profile, the dip angles usually form a cross-over pattern (in this case, from positive-west dips, to negative-east dips) above the conductor as with a standard vertical-loop E.M. method.

Readings were taken at 30-meter stations on 150-meter spaced crosslines. Approximately 66 km of grid were surveyed in this manner.

Nine conductors, designated A to I respectively, and several weak conductive trends were delineated. These are briefly summarized below:

Conductor	Length	Trend	Strength	Comments
A	1400 m	NW	strong on L8-10W weak elsewhere	Coincidental with a lineament (shear zone?). Conductivity diminishes to the NW & SE.
B	1300 m	SW	strong	Coincidental with a narrow, sharp lineament (shear zone?). Conductor open off grid to the NE; dies out to the SW.
C	< 5.6 km	E-W	variable, generally strong. Weak & broad at west end.	Coincidental with a large-scale lineament (lake and muskeg-filled trough). Open to east and west.
D	600 m	N	strong, narrow	North end is open into the lake; conductivity dies out at south end. Coincidental with a weak lineament or shear zone.
E	400 m	NW	weak	Possibly related to shearing.
F	400 m	NW	weak, broad	Open off grid to NW; trends into lake to SE. Possibly related to shearing parallel to an intrusive contact.

Conductor	Length	Trend	Strength	Comments
G	1200 m	NW	moderate, broad	Open off grid to NW; conductivity dies out to SE. Coincidental with a pronounced lineament.
H	900 m	E-W	weak	Conductivity dies out to west. Weak conductive trend for an additional 900 m to east coincidental with a weak topographical break.
I	1200 m	E-W	strong, broad	Open off grid to W, conductivity dies out to E. Follows a weak topographic low through a sand plain.

All of the above noted conductors are here inferred to be coincidental with chloritized shear or fracture related lineaments.

SOIL RADON GAS SURVEY (c.f. Map 78-3, in pocket)

Soil radon gas measurements were recorded with an E.D.A. Instruments model RD-200 portable radon emanometer. Typically, readings were taken at 30-meter station intervals on 150-meter spaced grid lines; numerous extra stations were selected between grid lines over several of the stronger VLF-E.M. conductors.

Readings were obtained by inserting a 5/16"-diameter needle-bar to a depth of 18" to 20" into the overburden -- the bar was slowly removed and a probe inserted, and the resultant soil gas pumped manually into a counting cell. A one-minute count was recorded; if the value exceed an arbitrary level of 30 counts per minute, two additional one-minute counts were also recorded. This latter procedure allows the operator to discriminate between radon 222 and thoron-related alpha activity.

Considerable difficulty was encountered in muskeg areas as permafrost is ubiquitous. Also, radon values are exceptionally low over sand plain areas as the dry, permeable profile will not trap the gas.

No anomalous values were recorded. Uniformly, the three one-minute count ratios indicate dominantly thoron-related alpha activity.

SOIL GEOCHEMICAL SURVEY (c.f. Map 78-2, in pocket)

750 soil geochemical samples (B horizon, where obtainable) were taken at 30-meter intervals along the grid lines. The samples were analyzed fluorometrically for uranium by Loring Laboratories Ltd. and Chemex Labs (Alberta) Ltd., of Calgary.

Only 9 samples returned values of greater than 40 ppm U. Of these, 7 were black organic oozes taken from the drainage of the lake with the highest uranium lake sediment value from the 1977 survey. The eighth sample consisted of fine sand below a weakly radioactive aplite dike (line 29W, on the north shore of the same lake). The ninth sample was also black organic ooze from a muskeg on L 36W.

In summary, no significant anomalous geochemical trends were indicated by this survey.

BEDROCK GEOCHEMICAL SURVEY (c.f. Map 78-1, in pocket)

120 bedrock geochemical samples were selected in order to facilitate interpretation of the soil geochemical data and to ascertain background values for the various map units. An additional 19 samples (7 of which were subsequently assayed) were also taken from radioactive spot highs in outcrop in order to verify the uranium content indicated by the spectrometer survey.

Background values for the three main rock types were uniformly low, varying from less than 0.4 ppm U to 3.0 ppm U.

No significant anomalous trends were indicated.

PROSPECTING RESULTS (c.f. Map 78-1, in pocket)

The grid area was prospected in considerable detail. A McPhar TV-1A spectrometer was carried at waist height during the mapping, and total count values (readings expressed as counts per minute) were recorded at each station and for most outcrops. Areas between grid lines were traversed by two prospectors carrying Scintrex model BGS-1SL total count scintillometers (readings expressed as counts per second).

Radioactivity background levels for the various rock types and overburden are as follows:

Muskeg	500 to 750 counts per minute
Sand Plain	1250 to 2000 counts per minute
Porphyroblastic Granite	3000 to 4000 counts per minute in the eastern sector of the grid 3500 to 6000 counts per minute in the western sector
Red Granite Gneiss	4000 to 5000 counts per minute
Aplite	5000 to 9000 counts per minute
Pegmatite	4000 to 8000 counts per minute

No significant radioactivity was encountered within the grid area. Several dozen small spot highs (generally less than 1' in diameter; rarely up to 5'x10'), occasionally off-scale on total-count mode, were noted exclusively in the aplite and pegmatite dikes. Secondary uranium staining is commonly associated with these "spot highs"; however, the spectrometer and geochemical/assay results indicate a predominance of thorium-related radioactivity. Furthermore, the pegmatite dikes are generally narrow (less than 10') and discontinuous, thereby limiting the potential.

The best assay results were obtained from Sample R-136 (0.66 % U_3O_8; 600 m S and 47 m E of L 21W; coarse-grained white pegmatite with traces of secondary uranium stain), and duplicate samples R-137/138 (0.205% and 0.172%

U_3O_8 respectively; 120 m S and 60 m W of L 33W; medium-grained, dark pink hematized and sheared pegmatite).

CONCLUSIONS AND RECOMMENDATIONS

No significant radioactivity was encountered during the 1978 field program. The soil radon gas determinations and bedrock and soil geochemical sampling surveys were similarly disappointing. The VLF-E.M. conductors appear to be related to chloritized shear zones and fractures (alteration adjacent to these lineaments does not appear to extend significantly into the country rock; hence, the potential for Beaverlodge-type mineralization appears to be limited). No significant metasedimentary remnants were noted within the granitic terrain.

The lake sediment geochemical anomalies derived from the 1977 survey appear to be related to: firstly, a weakly radioactive (two to three times local background) aplite dike (c.f., Map 78-1, Sheet 2); and, secondly, to numerous radioactive spot highs in narrow pegmatite veins. Concentration of uranium in the lake sediments would be further enhanced by the large percentage of exposed bedrock.

In the writer's opinion, no further expenditures are warranted within the grid area.

In view of the discouraging results obtained to date, it is recommended that final assessment of the southern portion of the Permit (lake sediment geochemical anomalies MB-51, 80.8 ppm U; and MB-55, 106.0 ppm U) be contingent upon a two- or three-day reconnaissance field examination by a geologist and one assistant. This investigation should be conducted in the late spring. Estimated budget would be approximately $5,000 including helicopter time.

Particular attention should be paid to the possible presence of White Lake Complex metasediments (equivalent to Tazin Group), the unit presumed to host the Maurice Bay deposits to the east. Aeromagnetic expressions do not, however, suggest any significant areal extent of this unit.

APPENDIX

CERTIFICATE

I, the undersigned, James Rupert Allan, of the City of Calgary, in the province of Alberta, do hereby certify:

1. that I am a Professional Geologist with an office mailing address at #301, 1300 - 8th Street S.W.;

2. that I graduated from the University of Alberta, Edmonton, with a Bachelor of Science degree, in 1969;

3. that I am a registered Professional Geologsit with the Association of Professional Engineers, Geologists and Geophysicists of Alberta;

4. that I am a Fellow of the Geological Association of Canada;

5. that I have been practising my profession as a geologist continuously for nine years;

6. that I have no interest, either direct or indirect, in Marline Oil Corporation, nor do I expect to receive any.

7. that the writer was on the property during the period July 19 to August 18, 1978.

DATED AT CALGARY, ALBERTA, this 31 day of December, 1978.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF ALBERTA
PERMIT NUMBER
P 2399
TAIGA CONSULTANTS LTD.

PROFESSIONAL GEOLOGIST RUPERT ALLAN ALBERTA

James Rupert Allan, B.Sc., P.Geol.

PERSONNEL

(July 19 - August 18, 1978)	Man Days
J. R. Allan, P.Geol., Project Supervisor 3609 - 1a St. S.W., Calgary, Alberta	25.5
J. Lytle, Geophysical Operator General Delivery, LaRonge, Saskatchewan	31.0
S. Hayduckawich, Senior Prospector P. O. Box 38, Candle Lake, Saskatchewan	31.0
W. Buller, Senior Prospector P. O. Box 1733, Grand Forks, B.C.	31.0
S. Mirasty, Junior Prospector P. O. Box 726, LaRonge, Saskatchewan	25.5
R. Essery, Junior Prospector P. O. Box 2064, Yellowknife, N.W.T.	31.0
D. Zlipko, Junior Prospector 773 Third St. East, Prince Albert, Saskatchewan	25.0
B. McKenzie, Cook General Delivery, LaRonge, Saskatchewan	31.0
TOTAL	231.0

Time Breakdown	Man Days
Grid Emplacement and Cut and Chaining Baseline	28
VLF-E.M. Survey	13
Soil Geochemistry	20
Radon Soil Gas Survey	23
Mapping and Rock Geochemistry	20
Prospecting	58
Supervision and Logistics	2
Camp Construction and time lost to weather	22
Mobilization and Demobilization	16
Cook	29
TOTAL	231

SUMMARY OF EXPENDITURES (unaudited)

1977 Lake Sediment Geochemical Survey		
Taiga Consultants Ltd. invoices	$ 3,844.03	
Marline Oil Corporation administration	384.40	
	4,228.43	$ 4,228.43
1978 Prospecting Program (July 19-31, 1978)		
Pre-field data compilation, preparation of photomosaic, drafting of base maps, crew and equipment logistics.	1,300.00	
Salaries (8 crew members & supervisor)	28,685.00	
Transportation: including mobilization, demobilization, service flights, travel expenses, freight.	4,390.27	
Camp Equipment Rental, food, disposable supplies, fuel, lumber.	5,067.20	
Instrument & Equipment Rentals: including scintillometers, spectrometer, radon emanometer, VLF electromagnetometer, radio, boat, motor.	3,145.00	
Geochemical Analyses and Assays.	3,040.85	
Office: reproductions, photocopying, telephone.	551.42	
Taiga Consultants Ltd. service charges on third-party invoices.	415.36	
Post-field data compilation, report writing, drafting.	2,400.00	
Taiga Consultants Ltd. invoices. SUB-TOTAL	48,995.10	
Marline Oil Corporation administration @ 10%	4,899.50	
TOTAL	53,894.60	$ 53,894.60

1978 Expenditures = $2.71/acre

RD-200
Portable Radon Detector

Specifications

Isotopes Measured	Radon-222, half life 3.82 days, sixth member of the Uranium-238 decay series. Radon-220 (Thoron), half life 54.5 seconds, fifth member of the Thorium-232 decay series. Radium-226, half life 1,622 years, immediate precursor of Rn-222. Radon daughters.
Detector System	ZnS(Ag) scintillator cell coupled to a 30mm diameter photomultiplier tube. PMT amplification 1 x 10^7. High voltage supply internally adjustable ±1% at nominal 600 volts.
Cell	Volume, 170cc. Surface area of phosphor, 14,350mm^2. Dimensions, 53mm diameter x 73mm high.
Sensitivity to Radon as Daughters Accumulate	1.2 cpm/pc after one minute. 2.2 cpm/pc after ten minutes. 4.0 cpm/pc after one hour.
Efficiency of ZnS(Ag)	Empirically determined to be approximately 33-35%.
Electronics	High specification, low power consumption all solid state C/MOS logic circuitry.
Counting System	Integrating linear counter, capacity 99999 counts. Switch selectable counting periods: Manual, 1, 2, 5, 10, 30 and 60 minutes.
Display	Five digit LED, first 4 digits automatically switched off after 10 seconds to conserve batteries.
Calibration	Against standard (Radium) test cell provided, adjusted internally to less than ± 5%.
Power Supply	Internal, 8 "C" cells (alkaline). External, any 10-24V DC source.
Battery Life	30 days under average field conditions.
Operating Temperature	-30°C to +40°C.
Dimensions	
Console	127 x 165 x 280mm (5" x 6.5" x 11")
Shipping (System)	610 x 610 x 355mm (24" x 24" x 14")
Weights	
Console	2.7kg (6 lbs.)
System	3.2kg (7 lbs.)
Shipping (System)	9.0kg (20 lbs.)
Standard System Components	Detector Console, Test Cell, 5 Soil-Gas Cells, 5 Cell Caps, 14" Probe/Pump, 8 "C" Cell Batteries, Flat Cap with Two Swagelok Connectors and Instruction Manual.
Options and Accessories	RDU-200 Radon Degassing System. RDX-356 Heavy Duty 29" Soil Probe. RDX-700 External Battery Pack for cold weather operations. RDX-703/4 Battery Charger to be used with rechargeable NiCad batteries. Input either 110V AC, 60 Hz or 240V AC, 50 Hz. RDX-706/7 External AC/DC Power Supply Converter. RDM-225 Audio Alarm, indicates end of counting period.

CRONE GEOPHYSICS LIMITED
3607 Wolfedale Road
Mississauga, Ontario, Canada
Phone: 270-0096

SPECIFICATIONS CRONE RADEM VLF-E.M.

Source of Primary Field: VLF Communication Stations 12 to 24 KHz

Number of Stations: 7 switch selectable

Stations Available: The seven standard stations are Cutler, Maine, 17.8; Seattle, Washington, 18.6; Collins, Colorado, 20.0; Annapolis, Md., 21.4; Panama, 24.0; Hawaii, 23.4; England, 16.0. Alternative stations which may be substituted are: Gorki, Russia, 17.1; Japan, 17.4; England, 19.6; Australia, NWC, 22.3 KHz.

Check that Station is Transmitting: Audible signal from speaker.

Parameters Measured and Means:

(1) DIP ANGLE in degrees, from the horizontal of the magnetic component of the VLF field. Detected by minimum on the field strength meter and read from an inclinometer with a range of ±80° and an accuracy of ±½°.

(2) Field Strength (total or horizontal component) of the magnetic component of the VLF field. Measured as a per cent of normal field strength established at a base station. Accuracy ±2% dependent on signal. Meter has two ranges: 0 — 300% and 0 — 600%. Switch for "keyed" or "F.S." (steady) signal.

(3) Out of Phase component of the magnetic field, perpendicular in direction to the resultant field, measured without sign, as a per cent of normal field strength. This is the minimum reading of the Field Strength meter obtained when measuring the dip angle. Accuracy ±2%.

Operating Temperature Range: −20° to +110° F.

Dimensions and Weight: 3.5″ × 7.5″ × 10.5″ — 6 lb.

Shipping: Foam-lined wooden case — shipping wt. — 15 lb.

Batteries: 2 of 9 volt: Eveready 216, Burgess 2U6, Mallory M-1604

Average life expectancy — 3 weeks to 3 months dependent on amount of usage.

CHEMEX

CALGARY 2021 - 41 AVE. N.E. CALGARY, CANADA T2E 6P2
TELEPHONE (403) 276-9627 TELEX 038-25541
EDMONTON 6112 DAVIES ROAD, EDMONTON, CANADA T6E 4M9
TELEPHONE (403) 465-9877 TELEX 037-41596

CERTIFICATE OF ANALYSIS

• MINERAL • GAS • WATER • OIL • SOILS • VEGETATION • ENVIRONMENTAL ANALYSIS

TAIGA CONSULTANTS LTD
301-1200-8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
S1	<0.4
S2	<0.4
S3	35.5
S4	<0.4
S5	<0.4
S6	<0.4
S7	<0.4
S8	<0.4
S9	<0.4
S10	<0.4
S11	<0.4
S12	<0.4
S13	<0.4
S14	<0.4
S15	<0.4
S16	<0.4
S17	<0.4
S18	<0.4
S19	<0.4
S20	<0.4
S21	<0.4
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S24	<0.4
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S26	<0.4
S27	<0.4
S28	<0.4
S29	<0.4
S30	<0.4
S31	<0.4
S32	<0.4
S33	<0.4
S34	11.5
S35	<0.4
S36	<0.4
S37	<0.4
S38	10.0
S39	<0.4
S40	<0.4

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by [redacted]

CHEMEX

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TELEPHONE (403) 465-9877 TELEX 037-41596

CERTIFICATE OF ANALYSIS

• MINERAL • GAS • WATER • OIL • SOILS • VEGETATION • ENVIRONMENTAL ANALYSIS

TAIGA CONSULTANTS LTD
301-1200-8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78
PROJECT NO. 7487-1-93

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
S41	1.5
S42	<0.4
S43	1.5
S44	<0.4
S45	<0.4
S46	1.5
S47	<0.4
S48	<0.4
S49	<0.4
S50	<0.4
S51	1.5
S52	<0.4
S53	<0.4
S54	<0.4
S55	7.0
S56	18.0
S57	<0.4
S58	<0.4
S59	<0.4
S60	<0.4
S61	<0.4
S62	<0.4
S63	<0.4
S64	<0.4
S65	<0.4
S66	<0.4
S67	11.5
S68	<0.4
S69	<0.4
S70	<0.4
S71	<0.4
S72	<0.4
S73	<0.4
S74	<0.4
S75	<0.4
S76	6.5
S77	<0.4
S78	<0.4
S79	1.5
S80	<0.4

Certified by ... [redacted]

CHEMEX

CALGARY 2021 - 41 AVE. N.E. CALGARY, CANADA T2E 6P2
TELEPHONE (403) 276-9627 TELEX 038-25541
EDMONTON 6112 DAVIES ROAD, EDMONTON, CANADA T6E 4M9
TELEPHONE (403) 465-9877 TELEX 037-41596

CERTIFICATE OF ANALYSIS

• MINERAL • GAS • WATER • OIL • SOILS • VEGETATION • ENVIRONMENTAL ANALYSIS

TAIGA CONSULTANTS LTD
301-1200-8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
S81	<0.4
S82	1.5
S83	<0.4
S84	6.0
S85	<0.4
S86	<0.4
S87	<0.4
S88	<0.4
S89	<0.4
S90	<0.4
S91	<0.4
S92	<0.4
S93	<0.4
S94	<0.4
S95	<0.4
S96	<0.4
S97	3.0
S98	<0.4
S99	<0.4
S100	<0.4
S101	<0.4
S102	<0.4
S103	<0.4
S104	<0.4
S105	<0.4
S106	1.5
S107	<0.4
S108	<0.4
S109	<0.4
S110	<0.4
S111	<0.4
S112	<0.4
S113	<0.4
S114	<0.4
S115	<0.4
S116	1.5
W1	<0.4
W2	<0.4
W3	<0.4
W4	<0.4

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by ... [redacted]

CHEMEX

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TAIGA CONSULTANTS LTD
301-1200-8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
W5	<0.4
W6	<0.4
W7	<0.4
W8	<0.4
W9	<0.4
W10	<0.4
W11	<0.4
W12	3.0
W13	<0.4
W14	<0.4
W15	<0.4
W16	<0.4
W17	<0.4
W18	<0.4
W19	<0.4
W20	<0.4
W21	1.5
W22	<0.4
W23	<0.4
W24	<0.4
W25	<0.4
W26	<0.4
W27	<0.4
W28	<0.4
W29	<0.4
W30	<0.4
W31	<0.4
W33	<0.4
W32	<0.4
W34	<0.4
W35	<0.4
W36	<0.4
W37	<0.4
W38	<0.4
W39	<0.4
W40	<0.4
W41	<0.4
W42	<0.4
W43	<0.4
W44	<0.4

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by [redacted]

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TAIGA CONSULTANTS LTD
301-1300 8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
W45	<0.4
W46	<0.4
W47	<0.4
W48	<0.4
W49	<0.4
W50	<0.4
W51	<0.4
W52	<0.4
W53	<0.4
W54	<0.4
W55	<0.4
W56	<0.4
W57	<0.4
W58	<0.4
W59	1.5
W60	<0.4
W61	<0.4
W62	<0.4
W63	<0.4
W64	<0.4
W65	<0.4
W66	<0.4
W67	<0.4
W68	<0.4
W69	<0.4
W70	<0.4
W71	<0.4
W72	<0.4
W73	<0.4
W74	<0.4
W75	<0.4
W76	<0.4
W77	<0.4
W78	<0.4
W79	<0.4
W80	<0.4
W81	<0.4
W82	<0.4
W83	<0.4
W84	<0.4

CTA MEMBER CANADIAN TESTING ASSOCIATION

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TAIGA CONSULTANTS LTD
301-1300 8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
W85	<0.4
W86	<0.4
W87	<0.4
W88	<0.4
W89	<0.4
W90	<0.4
W91	<0.4
W92	<0.4
W93	<0.4
W94	<0.4
W95	<0.4
W96	<0.4
W97	<0.4
W98	<0.4
W99	<0.4
100	<0.4
W101	<0.4
W102	1.5
W103	<0.4
W104	<0.4
W105	<0.4
W106	<0.4
W107	<0.4
W108	<0.4
W109	1.5
W110	<0.4
W111	<0.4
W112	<0.4
W113	<0.4
W114	<0.4
W115	<0.4
W116	<0.4
W117	<0.4
W118	<0.4
W119	<0.4
W120	<0.4
W121	1.5
W122	<0.4
W123	<0.4
W124	<0.4

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CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
W125	3.0
W126	1.5
W127	<0.4
W128	<0.4
W129	<0.4
W130	<0.4
W131	<0.4
W132	<0.4
W133	<0.4
W134	<0.4
W135	<0.4
W136	<0.4
W137	<0.4
W138	<0.4
W139	<0.4
R1	<0.4
R2	<0.4
R3	42
R4	<0.4
R5	1.5
R6	<0.4
R7	<0.4
R8	1.5
R9	<0.4
R10	<0.4
R11	1.5
R12	<0.4
R13	<0.4
R14	<0.4
R15	1.5
R16	3.0
R17	<0.4
R18	<0.4
R19	<0.4
R20	3.0
R21	1.5
R22	<0.4
R23	7.5
R24A	<0.4
R24B	1.5

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TAIGA CONSULTANTS LTD
301-1300 8TH ST SW
CALGARY, ALBERTA

DATE 29-AUG-78

PROJECT NO. 7487-1-934

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
R25	1.5
R26	1.5
R27	<0.4
R28	NO SAMPLE
R29	<0.4
R30	<0.4
R31	<0.4
R32	1.5
R33	1.5
R34	1.5
R35	41.5
R36	1.5
R37	1.5
R38	<0.4
R39	<0.4
R40	<0.4
R41	<0.4
R42	<0.4
R43	5.0
R44	<0.4
R45	31
R46	<0.4
R47	1.5
R48	1.5
R49	NO SAMPLE
R50	<0.4
R51	100
R52	<0.4
R53	<0.4
R54	<0.4
R55	<0.4
R56	<0.4
.R57	1.5
R58	<0.4
R59	<0.4
R60	1.5
R61	<0.4
R62	<0.4

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TAIGA CONSULTANTS LTD
301-1300-8TH ST SW
CALGARY, ALBERTA

DATE 19-DEC-78
PROJECT NO. 7487-1-1646

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
S-171	<0.4
172	<0.4
173	<0.4
174	<0.4
175	<0.4
176	<0.4
177	<0.4
178	<0.4
179	<0.4
180	<0.4
181	<0.4
182	<0.4
183	<0.4
184	<0.4
185	<0.4
186	<0.4
187	<0.4
188	<0.4
189	<0.4
190	<0.4
191	<0.4
192	<0.4
193	<0.4
194	<0.4
195	<0.4
196	<0.4
197	<0.4
198	1.5
199	<0.4
200	<0.4
201	<0.4
202	<0.4
282	<0.4
283	<0.4
284	<0.4
285	<0.4
286	<0.4
287	<0.4
288	<0.4
289	<0.4
290	<0.4

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by [redacted]

CHEMEX

CALGARY 2021 - 41 AVE. N.E. CALGARY, CANADA T2E 6P2
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TAIGA CONSULTANTS LTD
301-1300-8TH ST SW
CALGARY, ALBERTA

DATE 19-DEC-78

PROJECT NO. 7487-1-1646

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
S-301	<0.4
302	<0.4
303	<0.4
304	<0.4
305	6.0
306	21.0
307	1.5
308	13.5
309	<0.4
310	<0.4
311	<0.4
321	<0.4
322	<0.4
323	<0.4
324	<0.4
325	1.5
326	<0.4
327	<0.4
R-63	<0.4
64	1.5
65	<0.4
66	<0.4
67	<0.4
68	<0.4
69	<0.4
70	<0.4
71	<0.4
72	4.5
73	<0.4
74	4.5
75	1.5
76	<0.4
77	<0.4
78	3.0
79	<0.4
80	<0.4
81	<0.4
82	1.5
83	1.5
R-84	1.5

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by [redacted]

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CALGARY 2021 - 41 AVE. N.E. CALGARY, CANADA T2E 6P2
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TAIGA CONSULTANTS LTD
301-1300-8TH ST SW
CALGARY, ALBERTA

DATE 19-DEC-78

PROJECT NO. 7487-1-164

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
R-85	1.5
86	<0.4
88	<0.4
89	<0.4
90A	<0.4
90B	<0.4
91	<0.4
92	<0.4
93	<0.4
94	<0.4
95	16.5
96	<0.4
97	<0.4
98	3.0
99	<0.4
100	<0.4
101	<0.4
R-102	<0.4
103	<0.4
104	<0.4
105	1.5
106	<0.4
107	<0.4
108	120
109	4.5
110	<0.4
111	<0.4
112	<0.4
113	<0.4
114	<0.4
115	<0.4
116	<0.4
117	<0.4
118	7.5
119	<0.4
120	<0.4
121	<0.4
122	<0.4
123	<0.4
R-124	

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by [redacted]

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TAIGA CONSULTANTS LTD
301-1300-8TH ST SW
CALGARY, ALBERTA

DATE 19-DEC-78
PROJECT NO. 7487-1-1646

GEOCHEMICAL ANALYSIS

SAMPLE NUMBER	U PPM
R-125	<0.4
126	940
127	7.5
128	10.5
129	145
130	1500
131	500
132	85
133	175
134	51
135	1100
137	1300
138	1200
139	260

NB - VALUES FOR SAMPLES #126, 130, 131, 135, 137 AND 138 ARE APPROXIMATE ONLY. ASSAYS WILL BE RUN ON THESE SAMPLES.

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by [redacted]

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CERTIFICATE OF ANALYSIS

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Taiga Consultants Ltd.
301, 1300 - 8 Street S. W.
Calgary, Alberta
T2R 1B2

DATE December 28, 1978

PROJECT NO. 7487-1-1646

U_3O_8 ASSAYS

Sample #	% U_3O_8
R-126	.128
R-130	.220
R-131	.066
R-135	.152
R-136	.660
R-137	.205
R-138	.172

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by .....

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
[redacted]gary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 1

SAMPLE No.	PPM U3O8
"Soil Geochems"	
JKL 1	0.4
2	0.2
3	0.2
4	0.2
5	0.2
6	0.2
7	0.2
8	0.2
9	NIL
10	0.2
11	0.2
12	NIL
13	0.2
14	0.2
15	0.2
16	0.2
17	0.2
18	0.2
19	0.2
20	0.5
21	0.4
22	0.2
23	0.2
24	0.2
25	0.2
26	0.2
27	0.5
28	NIL
29	0.2

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
JKL 30	0.2
31	0.2
32	0.5
33	0.9
34	NIL
35	0.5
36	0.2
37	0.2
38	0.2
39	2.0
40	44.0
41	0.2
42	1.8
43	0.2
44	0.2
45	0.2
46	0.6
47	NIL
48	NIL
49	0.2
50	0.2
51	0.2
52	NIL
53	0.6
54	NIL
55	0.4
56	0.2
57	0.2
58	0.2
59	0.2
60	NIL

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U3O8
JKL 61	0.2
62	NIL
63	0.2
64	0.2
65	NIL
66	0.2
67	NIL
68	0.2
69	0.6
70	0.2
71	0.2
72	1.2
73	0.2
74	0.4
75	1.4
76	0.6
77	1.2
78	0.2
79	0.6
80	0.2
81	NIL
W 140	0.4
141	0.4
142	3.6
143	42.0
144	1.0
145	0.2
146	0.6
147	0.2
148	8.4
149	2.0

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]
Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
[redacted]lgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 4

SAMPLE No.	PPM U308
W 150	0.6
151	0.2
152	0.6
153	0.4
154	9.2
155	1.4
156	0.6
157	1.2
158	1.6
159	0.2
160	0.6
161	0.2
162	0.4
163	0.4
164	NIL
165	1.2
166	0.8
S 117	0.2
118	0.2
119	1.4
120	6.4
121	1.0
122	0.2
123	2.2
124	0.2
125	0.4
126	1.2
127	0.6
128	0.4
129	3.0
130	3.0

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

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Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
S 131	0.4
132	0.4
133	0.4
134	0.4
135	0.4
136	1.8
137	2.0
138	0.6
139	0.4
140	1.0
141	0.8
142	0.4
143	0.4
144	0.2
145	0.4
146	0.4
147	0.6
148	0.2
149	1.6
150	1.2
151	0.6
152	0.4
153	0.4
154	0.2
155	0.4
156	1.6
157	2.4
158	2.8
159	0.4
160	0.2
161	0.4

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
S 162	0.2
163	0.2
164	NIL
165	0.4
166	0.2
167	0.4
168	0.6
169	0.6
170	1.0
203	0.4
204	1.4
205	NIL
206	43.2
207	5.4
208	NIL
209	2.4
210	0.4
211	0.4
212	0.4
213	0.8
214	1.2
215	1.6
216	0.8
217	0.4
218	0.4
219	0.2
220	2.0
221	0.2
222	0.4
223	0.4
224	0.8

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

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[redacted]

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ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
S 225	0.2
226	0.4
227	0.6
228	0.4
229	0.6
230	1.2
231	0.6
232	NIL
233	0.2
234	0.4
235	0.4
236	3.2
237	0.8
238	NIL
239	2.0
240	NIL
241	0.2
242	0.2
243	0.6
244	0.8
245	2.2
246	4.8
247	5.2
248	1.4
249	2.2
250	NIL
251	0.4
252	0.4
253	2.0
254	2.8
255	0.2

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

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Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
[redacted]gary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 8

SAMPLE No.	PPM U3O8
S 256	0.4
257	0.6
258	2.0
259	0.4
260	0.4
261	2.0
262	1.4
263	0.8
264	2.4
265	0.2
266	0.4
267	2.4
268	0.4
269	0.6
270	0.6
271	0.8
272	8.2
273	0.8
274	0.8
275	0.2
276	0.4
277	0.6
278	1.6
279	1.2
280	0.8
281	3.0
291	0.8
292	0.4
293	0.4
294	0.2
295	0.4

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 9

SAMPLE No.	PPM U308
S 296	0.8
297	0.2
298	2.4
299	1.4
300	0.8
312	0.2
313	0.8
314	0.8
315	1.4
316	0.4
317	0.2
318	8.6
319	7.4
320	11.4
B 2	0.2
3	0.2
4	NIL
5	0.2
6	0.2
7	0.2
8	0.6
9	5.6
10	30.8
11	57.4
12	2.0
13	8.0
14	0.4
15	0.8
16	0.4
17	0.4
18	0.6

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]
Licensed Assayer of British Columbia

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Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 10

SAMPLE No.	PPM U308
B 19	1.0
20	1.2
21	1.2
22	0.8
23	1.2
24	0.2
25	0.6
26	0.8
27	0.4
28	NIL
29	0.4
30	0.4
31	0.8
32	NIL
33	0.2
34	4.4
35	0.8
36	0.4
37	0.4
38	0.4
39	0.2
40	NIL
41	1.0
42	163.0
43	0.4
44	0.4
45	0.2
46	0.8
47	8.8
48	1.4
49	0.4

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U3O8
B 50	0.4
51	0.4
52	0.6
53	0.6
54	0.4
55	0.4
56	NIL
57	0.2
58	34.0
59	76.0
60	1.2
61	1.6
62	0.2
63	0.2
64	NIL
65	0.4
66	1.4
67	0.8
68	1.0
69	1.2
70	4.8
71	0.4
72	96.0
73	17.6
74	1.2
75	3.0
76	0.8
77	0.2
78	2.4
79	0.2
80	0.2

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]
Licensed Assayer of British Columbia

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Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 12

SAMPLE No.	PPM U308
B 81	0.4
82	0.4
83	0.4
84	0.4
85	0.2
86	0.2
87	0.4
88	309.0
89	28.0
90	84.0
92	2.4
93	0.6
94	1.2
95	0.6
96	0.2
97	0.8
98	0.6
99	0.8
101	1.6
102	1.2
103	0.4
104	0.8
105	0.8
106	0.6
107	1.0
108	0.6
109	1.0
110	0.6
111	0.4
112	0.6
113	0.8

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 13

SAMPLE No.	PPM U3O8
B 114	1.0
115	0.8
116	0.6
117	1.4
118	1.0
119	0.8
120	0.6
121	2.2
125	3.2
126	3.0
127	1.8
128	2.4
129	0.2
130	0.2
131	1.8
132	1.2
133	0.6
134	1.0
135	1.0
136	1.0
137	0.9
138	NIL
139	NIL
140	NIL
141	NIL
142	0.2
143	NIL
144	NIL
145	NIL
146	4.6
147	0.6

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]
Licensed Assayer of British Columbia

To: TAIGA CONSULTANTS LTD.,
301, 1300 - 8th Street S.W.,
Calgary, Alberta T2R 1B2

ATTN: Rupert Allan

File No. 15780
Date September 6, 1978
Samples Soil Geochems

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
B 148	0.6
149	1.6
150	0.2
152	0.8
153	0.8
154	4.6
155	1.6
156	NIL
157	1.8
158	0.2
159	0.2
160	0.6
161	NIL
162	0.2
163	0.2
164	NIL
165	0.2
166	0.2
167	NIL
168	0.2
169	NIL
170	NIL
171	0.2
172	0.2
173	4.6
174	0.6
175	0.2

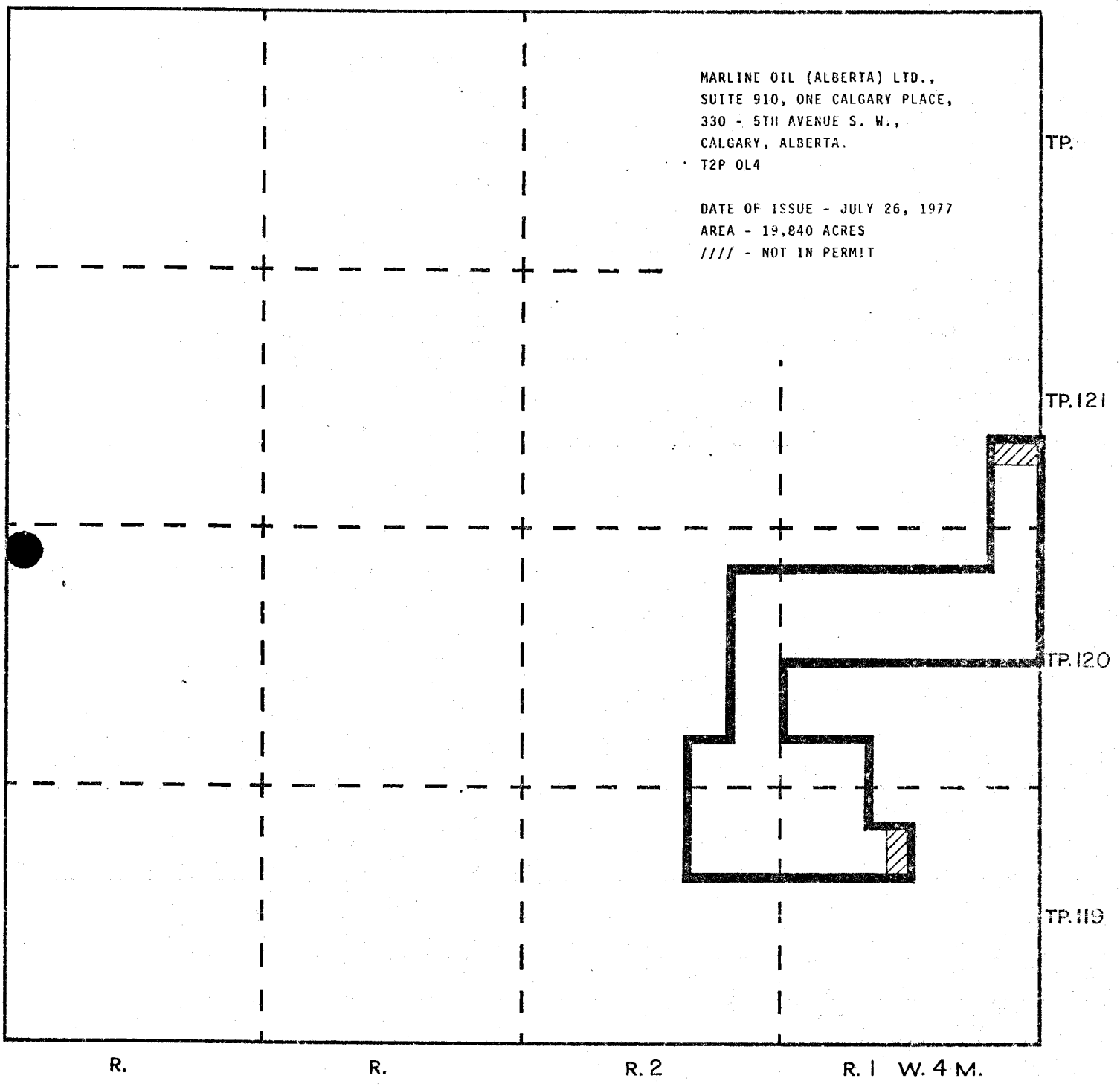
I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]
Licensed Assayer of British Columbia

QUARTZ MINERAL EXPLORATION PERMIT NO. 6877070001



MAP 78-2, SHEET 1 of 2

MARLINE OIL CORPORATION
BURSTALL LAKE PROJECT

ALBERTA QUARTZ MINERAL PERMIT 687707001
TWP 119-121, R.1-2, W4M (NTS 74-M-8)

SOIL GEOCHEMICAL SURVEY

DECEMBER 15, 1978
SCALE: 1:3000

0 50m 100m 150m 200m 300m

TAIGA CONSULTANTS LTD., CALGARY

LEGEND

SAMPLE NO. / % GEOCHEMICAL VALUE in parts per million URANIUM

19788816

(33)


37 W
36 W
35 W
34 W
33 W
32 W
31 W
30 W
29 W
28 W
27 W
26
25W
24W
23W
22W
21W
20W
1200
1170
1140
1110
1080
1050
1020
990
960
930
900
870
840
810
780
750
720
690
660
630
600
570
540
510
480
450
420
390
360
330
300
270
240
210
180
150
120
90
60
30 N
30 S
60
90
120
150
180
210
240
270
300
330
360
390
420
450
480
510
540
570
600
630
660
690
720
750
780
810
840
870
900
930
960
990
1020
1050
1080
1110
1140
1170
1200
START
STOP HERE FOR
STOP HERE
START
START
N
REFER TO SHEET 1 FOR LEGEND
MAP 78-2, SHEET 2 of 2
MARLINE OIL CORPORATION
BURSTALL LAKE PROJECT
ALBERTA QUARTZ MINERAL PERMIT 6877070001
TWP 119-121, R.1-2, W4M (N.T.S. 74-M-8)
SOIL GEOCHEMICAL SURVEY
DECEMBER 15, 1978
SCALE: 1:3000
0 30m 100m 200m 300m
TAIGA CONSULTANTS LTD., CALGARY
19780816
(34)

00 | 1 W | 2 W | 3 W | 4 W | 5 W | 6 W | 7 W | 8 W | 9 W | 10 W | 11 W | 12 W | 13 W

14 W | 15 W | 16 W | 17 W | 18 W | 19 W

990 960 930 900 870 840 810 780 750 720 690 660 630 600 570 540 510 480 450 420 390 360 330 300 270 240 210 180 150 120 90 60 30N B.L. 30S 60 90 120 150 180 210 240 270 300 330 360 390 420 450 480 510 540 570 600 630 660 690 720 750 780 810 840 870 900 930 960 990

A

B

C

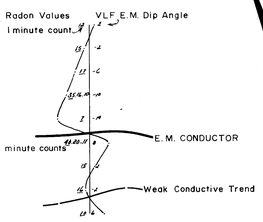
LEGEND

VLF E.M. SURVEY

INSTRUMENT:	CRONE RADEM VLF E.M.
OPERATOR:	J. LYTLE
STATION:	CUTLER, MAINE
FREQUENCY:	17.8 KHz
SCALE:	1 CM = 10 DEGREES

RADON SOIL GAS SURVEY

INSTRUMENT:	E.D.A. RD200 RADON EMANOMETER
OPERATORS:	S. MIRASTY, D. ZLIPKO
SAMPLING:	1 MINUTE COUNT TO 30 COUNTS/MINUTE. IF SAMPLE EXCEEDED 30CPM, 2 ADDITIONAL 1 MINUTE COUNTS WERE RECORDED.



19780016

MAP 78-3, SHEET 1 of 2

MARLINE OIL CORPORATION
BURSTALL LAKE PROJECT

ALBERTA QUARTZ MINERAL PERMIT 6877070001
TWP. 119-121, R.1-2, W4M (N.T.S. 74-M-8)

VLF E.M. SURVEY
SOIL RADON GAS SURVEY

DECEMBER 15, 1978
SCALE: 1:3000
0 50m 100m 150m 200m 300m

TAIGA CONSULTANTS LTD., CALGARY

(31)

1200 N
1170
1140
1110
1080
1050
1020
990
960
930
900
870
840
810
780
750
720
690
660
630
600
570
540
510
480
450
420
390
360
330
300
270
240
210
180
150
120
90
60
30 N
B.L.
30 S
60
90
120
150
180
210
240
270
300
330
360
390
420
450
480
510
540
570
600
630
660
690
720
750
780
810
840
870
900
930
960
990
1020
1050
1080
1110
1140
1170
1200 S

37 W
36 W
35 W
34 W
33 W
32 W
31 W
30 W
29 W
28 W
27 W
26 W
25W
24W
23W
22W
21W
20W

F
G
D
E
B
H
C
I

Sheet 2 of 2.

MARLINE OIL CORPORATION
BURSTALL LAKE PROJECT

ALBERTA QUARTZ MINERAL PERMIT 6877070001
TWP. 119-121, R.1-2, W4M (N.T.S. 74-M-8)

VLF E.M. SURVEY
SOIL RADON GAS SURVEY

DECEMBER 15, 1978
SCALE: 1:3000

0 50m 100m 150m 200m 300m

19780016

MAP 78-3 SHEET 2
Refer to Sheet 1 for Legend

TAIGA CONSULTANTS LTD., CALGARY

32

MARLINE OIL CORPORATION
BURSTALL LAKE PROJECT

ALBERTA QUARTZ MINERAL PERMIT 6877070001
TWP. 119-121, R. 1-2, W4M (N.T.S. 74-M-8)

GEOLOGY & ROCK GEOCHEMISTRY

DECEMBER 15, 1978
SCALE: 1:3000

0 30m 100m 150m 200m 300m

TAIGA CONSULTANTS LTD, CALGARY

Sheet 2 of 2

19780016

LEGEND

1 PORPHYROBLASTIC GRANITE (LOCALLY MEGACRYST GRANODIORITE)
HIGHLY VARIABLE COMPOSITION FROM GRANITE TO GRANODIORITE TO QUARTZ DIORITE. INVARIABLY K-FELDSPAR PORPHYROBLASTIC; MODERATELY TO WELL FOLIATED; F.G. TO M.G. MATRIX. MATRIX CONSISTS OF 15% to 50% BIOTITE, HORNBLENDE, CHLORITE AND QUARTZ. PORPHYROBLASTS OFTEN ALIGNED PARALLEL TO FOLIATION. WEATHERS LIGHT PINK TO GREY. OFTEN CONTAINS FINELY DISSEMINATED PYRITE AND ACCESSORY MAGNETITE.

2 RED GRANITE GNEISS; FINE TO MEDIUM GRAINED; GENERALLY LESS WELL FOLIATED THAN (1) ABOVE; OFTEN MASSIVE. COMMONLY LESS THAN 5% BIOTITE ± HORNBLENDE. DARK RED TO LIGHT PINK ON WEATHERED & FRESH SURFACE. RARELY K-FELDSPAR PORPHYROBLASTIC.

3 PINK GRANITE (INTRUSIVE INTO 1? EXPOSED ON THE NORTH END OF LINES 36W & 37W AS A 250' HILL); FINE TO MEDIUM-GRAINED; LIGHT PINK TO GREY, MASSIVE TO POORLY FOLIATED, COMMONLY 2% TO 3% BIOTITE ± HORNBLENDE.

4 PEGMATITE; INTRUDES 1, 2, & 3; LIGHT PINK TO WHITE, COMMONLY LESS THAN 5% MAFIC MINERALS. DIKES ARE GENERALLY LESS THAN 5' IN WIDTH AND ARE SELDOM TRACEABLE FOR MORE THAN 50'.

5 APLITE; LIGHT ORANGE TO PINK TO BUFF-COLORED; GENERALLY LESS THAN 5% MAFIC MINERALS (DOMINANTLY BIOTITE).

GEOLOGIC CONTACT: INFERRED, ASSUMED

FOLIATION, DIPPING

OUTCROP BOUNDARIES

SLOPE; EXPRESSED IN PERCENT

GLACIAL STRIAE

SPECTROMETER READING (McPHAR TV-1A) EXPRESSED IN COUNTS PER MINUTE: T_1- Total Count, T_2- U+Th, T_3-Th

SCINTILLOMETER READING (SCINTREX BGS-1SL) EXPRESSED IN COUNTS PER SECOND: TOTAL COUNT.

RADIOACTIVE SPOT HIGH

BEDROCK GEOCHEMICAL SAMPLE: ANALYSIS IN PARTS PER MILLION U; VALUES LESS THAN 3.0 ppm NOT PLOTTED.

Magnetic Declination 25°E

19780016

MAP 78-1, SHEET 1 of 2

MARLINE OIL CORPORATION
BURSTALL LAKE PROJECT

ALBERTA QUARTZ MINERAL PERMIT 6877070001
TWP. 119-121, R.1-2, W4M (N.T.S. 74-M-8)

GEOLOGY & ROCK GEOCHEMISTRY

DECEMBER 15, 1978
SCALE: 1:3000
0 50m 100m 150m 200m 300m

TAIGA CONSULTANTS LTD., CALGARY

Copy of Loring lab Results

19780016.

JKL 1	All on sheet 2/2	0.4
2		0.2
3		0.2
4		0.2
5		0.2
6		0.2
7		0.2
8		0.2
9		Nil
10		0.2
11		0.2
12		Nil
13		0.2
14		0.2
15		0.2
16		0.2
17		0.2
18		0.2
19		0.2
20		0.5
21		0.4
22		0.2
23		0.2
24		0.2
25		0.2
26		0.2
27		0.5
28		Nil
29		0.2
30		0.2
31		0.2
32		0.5
33		0.9
34		Nil
35		0.5
36		0.2
37		0.2
38		0.2
39		2.0
40		44.0
41		0.2
42		1.8
43		0.2
44		0.2

45	0.2
46	0.6
47	Nil
48	Nil
49	0.2
50	0.2
51	0.2
52	Nil
53	0.6
54	Nil
55	0.4
56	0.2
57	0.2
58	0.2
59	0.2
60	Nil
61	0.2
62	Nil
63	0.2
64	0.2
65	Nil
66	0.2
67	Nil
68	0.2
69	0.6
70	0.2
71	0.2
72	1.2
73	0.2
74	0.4
75	1.4
76	1.2
77	0.6
78	0.2
79	0.6
80	0.2
81	Nil
W 140 – All on sheet 2/2	0.4
141	0.4
142	3.6
143	42.0
144	1.0
145	0.2
146	0.6

147	0.2
148	8.4
149	2.0
150	0.6
151	0.2
152	0.6
153	0.4
154	9.2
155	1.4
156	0.6
157	1.2
158	1.6
159	0.2
160	0.6
161	0.2
162	0.4
163	0.4
164	Nil
165	1.2
166	0.8
S 117	0.2
118	0.2
119	1.4
120	6.4
121	1.0
122	0.2
123	2.2
124	0.2
125	0.4
126	1.2
127	0.6
128	0.4
129	3.0
130	3.0
131	0.4
132	0.4
133	0.4
134	0.4
135	0.4
136	1.8
137	2.0
138	0.6
139	0.4
140	1.0

141	0.8
142	0.4
143	0.4
144	0.2
145	0.4
146	0.4
147	0.6
148	0.2
149	1.6
150	1.2
151	0.6
152	0.4
153	0.4
154	0.2
155	0.4
156	1.6
157	2.4
158	2.8
159	0.4
160	0.2
161	0.4
162	0.2
163	0.2
164	Nil
165	0.4
166	0.2
167	0.4
168	0.6
169	0.6
170 ↑ sheet 1/2	1.0
203 ↓ sheet 2/2	0.4
204	1.4
205	Nil
206	43.2
207	5.4
208	Nil
209	2.4
210	0.4
211	0.4
212	0.4
213	0.8
214	1.2
215	1.6
216	0.8

217	0.4
218	0.4
219	0.2
220	2.0
221	0.2
222	0.4
223	0.4
224	0.8
225	0.2
226	0.4
227	0.6
228	0.4
229	0.6
230	1.2
231	0.6
232	Nil
233	0.2
234	0.4
235	0.4
236	3.2
237	0.8
238	Nil
239	2.0
240	Nil
241	0.2
242	0.2
243	0.6
244	0.8
245	2.2
246	4.8
247	5.2
248	1.4
249	2.2
250	Nil
251	0.4
252	0.4
253	2.0
254	2.8
255	0.2
256	0.4
257	0.6
258	2.0
259	0.4
260	0.4

261	2.0
262	1.4
263	0.8
264	2.4
265	0.2
266	0.4
267	2.4
268	0.4
269	0.6
270	0.6
271	0.8
272	8.2
273	0.8
274	0.8
275	0.2
276	0.4
277	0.6
278	1.6
279	1.2
280	0.8
281	3.0
291	0.8
292	0.4
293	0.4
294	0.2
295	0.4
296	0.8
297	0.2
298	2.4
299	1.4
300	0.8
312	0.2
313	0.8
314	0.8
315	1.4
316	0.4
317	0.2
318	8.6
319	7.4
320 ↑ Sheet 2/2	11.4
B 2	0.2
3	0.2
4	Nil
5	0.2

6	0.2
7	0.2
8	0.6
9	5.6
10	30.8
11	57.4
12	2.0
13	8.0
14	0.4
15	0.8
16	0.4
17	0.4
18	0.6
19	1.0
20	1.2
21	1.2
22	0.8
23	1.2
24	0.2
25	0.6
26	0.8
27	0.4
28	Nil
29	0.4
30	0.4
31	0.8
32	Nil
33	0.2
34	4.4
35	0.8
36	0.4
37	0.4
38	0.4
39	0.2
40	Nil
41	1.0
42	163.0
43	0.4
44	0.4
45	0.2
46	0.8
47	8.8
48	1.4
49	0.4

50	0.4
51	0.4
52	0.6
53	0.6
54	0.4
55	0.4
56	Nil
57	0.2
58	34.0
59	76.0
60	1.2
61	1.6
62	0.2
63	0.2
64	Nil
65	0.4
66	1.4
67	0.8
68	1.0
69	1.2
70	4.8
71	0.4
72	96.0
73	17.6
74	1.2
75	3.0
76	0.8
77	0.2
78	2.4
79	0.2
80	0.2
81	0.4
82	0.4
83	0.4
84	0.4
85	0.2
86	0.2
87	0.4
88	309.0
89	28.0
90	84.0
92	2.4
93	0.6
94	1.2

95	0.6
96	0.2
97	0.8
98	0.6
99	0.8
101	1.6
102	1.2
103	0.4
104	0.8
105	0.8
106	0.6
107	1.0
108	0.6
109 ↑ sheet 1/2	1.0
110 ↓ sheet 2/2	0.6
111	0.4
112	0.6
113	0.8
114	1.0
115	0.8
116	0.6
117	1.4
118	1.0
119	0.8
120	0.6
121	2.2
125	3.2
126	3.0
127	1.8
128	2.4
129	0.2
130	0.2
131	1.8
132	1.2
133	0.6
134	1.0
135	1.0
136	1.0
137	0.9
138	Nil
139	Nil
140	Nil
141	Nil
142	0.2

143	Nil
144	Nil
145	Nil
146	4.6
147	0.6
148	0.6
149	1.6
150	0.2
152	0.8
153	0.8
154	4.6
155	1.6
156	Nil
157	1.8
158	0.2
159	0.2
160	0.6
161	Nil
162	0.2
163	0.2
164	Nil
165	0.2
166	0.2
167	Nil
168	0.2
169	Nil
170	Nil
171	0.2
172	0.2
173	4.6
174	0.6
175	0.2