GM 26752

A GEOLOGICAL REPORT

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Énergie et Ressources naturelles
Québec

A GEOLOGICAL REPORT

ON

THE EL COCO EXPLORATIONS LIMITED

PROPERTY

BY

YVON BRUNEAU

Montreal, Que. PUBLIC July 1, 1970.

Ministère des Richesses Naturelles, Québec
18 MAR 1971
SERVICE DES GITES MINÉRAUX
No GM-26752

TITRES MINIERS - QUÉBEC
OCT 5 1970
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TABLE OF CONTENTS

ILLUSTRATIONS AND PLANS

GENERAL STATEMENT

This report refers to a property optioned by Labrador Exploration (Quebec) Limited on October 20, 1969, from El Coco Explorations Limited.

Labrador became interested in the property because of a new uranium discovery made by Soquem in the latter part of the 1969 summer season.

LOCATION AND ACCESS

The property is located 45 miles southeast of Montreal in St. Armand West Parish, Province of Quebec. Its western boundary passes just west of the Village of St. Armand and approximately two miles east of Lake Champlain. It is easily accessible by good paved highways and gravel roads.

Farming is the principal industry of the area. Fifty per cent of the claim group are open fields. Elevations on the property vary from 100 feet to 375 feet above sea level.

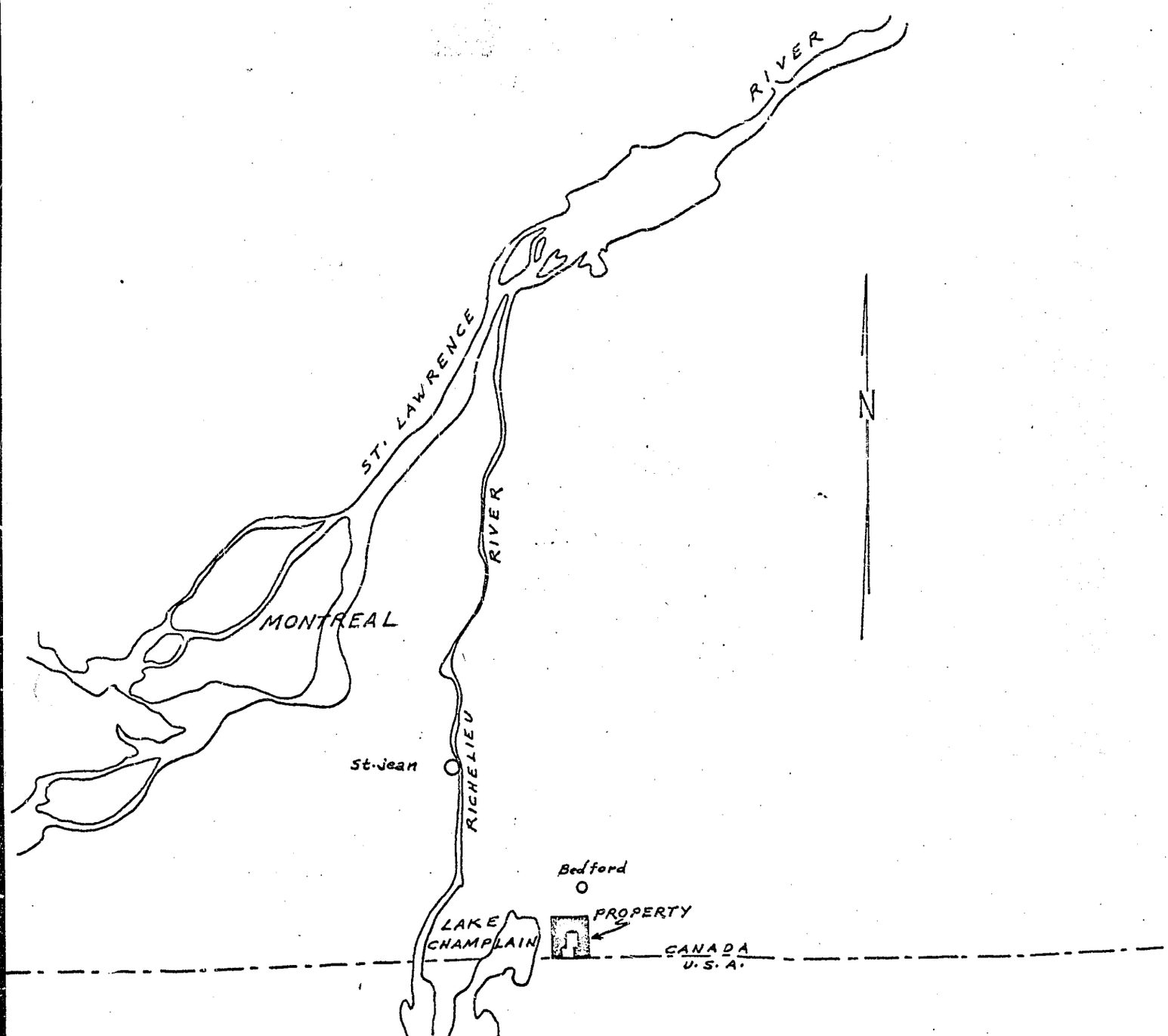
Rock outcrops are numerous over approximately 30% of the property. Overburden appears to be light, even in areas where rock does not outcrop, with the exception of the valley of Rock River where thick overburden can be expected.

CLAIM GROUP

The property is formed of 48 claims having a total area of 7115.03 acres. It surrounds Soquem's property on three sides. Including Soquem's property, the area is 4 miles by 4 miles. From Soquem's boundary, it extends for a minimum width of 1 mile and up to a maximum width of 2 miles. The northern boundary follows the Stanbridge Township St. Armand Parish line, the southern boundary the Canada United States border, and the western boundary is located 2 miles east of Lake Champlain.

The claims forming this group are as follows:-

Licence No.	Claim No.	Cad.	Lot No.	No. Acres	Staking Date
303876	1		22	213	Oct. 16,1969
303877	1		23	215.50	"
303878	1		24	195.45	"
303879	1		25	204.875	"
303880	1		36	88.8	"
303881	1	(99)	26	94	"
303881	2	(94)	27	25	"
303882	1		27	224.5	"
303885	1		129	218.5	Oct. 15,1969
303886	1		118	216.25	Oct. 15,1969
303889	1		105	212.63	Oct. 15,1969
303890	1		104	215.75	"
303891	1		103	213	"
303893	1		113	218.1	"
303892	1		102	212.5	"
303894	1		112	211	"
303895	1		101	209.25	"
303897	1		100	218.52	"
303896	1		111	208.5	"
303899	1		119	212.25	"
303903	1		109	219.1	"
303900	1		130	216.825	"
303901	1		131	221.4	"
303920	1		108	213.25	Oct. 16,1969
303919	1		107	220.12	"
303918	1		106	217.02	"
303913	1		121	203	Oct. 30, 1969
303914	1		132	182.75	"
302854	1	(95)	26	41.25	Mar. 2, 1970
302854	2	(96)	26	51	"
302854	3	(97-97A)	26	20.75	"
302854	4	(98)	26	30	"
302853	1	(91)	28	129	Jan. 5, 1970
302852	1	(90)	28	129.25	"
302851	1		W½ 29	115.5	"
302850	1		E½ 29	115.5	"
302849	1	(175)	120	57.28	Mar. 2, 1970
302849	2	(176)	120	52.28	"
302860	1	(177)	120	28.40	"
302860	3	(178)	120	28.40	"
302860	4	(179)	120	28.40	"
302860	5	(180-W½ 268)	120	28.90	Mar. 2, 1970
302858	1		110	203.5	Jan. 5, 1970
302860	2	(269(	110	25	"
306136	1	(88)		99	Mar. 7, 1970
306136	2	(87)		99.75	"
306134	1	(85)		129.79	"
306135	1	(86)		176.24	"



L·E·Q·-EL COCO OPTION

PROPERTY LOCATION SKETCH

Scale 1" = 15 miles

WORK ACCOMPLISHED

J. Caspary did geological field mapping work from May 1st to June 25th. He was helped in this work by W. Whiting from May 1st to May 21st and by D. Duncan from May 22nd to June 15th. Y. Bruneau supervised the field work. Drafting of the final geological plan and writing of the report was done by Y. Bruneau from June 26th to June 30th.

REGIONAL GEOLOGY

The area is located within the Appalachian Region. The western limit of this region being the Champlain fault (Logan's Line) is located two miles west of the property. West of the Champlain fault is the St. Lawrence Lowlands region, underlain by formations of flat-lying sandstones, limestones, and shales, of Cambrian and Ordovician age. These rocks form a gentle syncline with a northeast striking axis plunging northeastward. Most of these formations extend east of the Champlain fault but become increasingly difficult to recognize because of facies changes, thinning and increasing folding in an easterly direction. From west to east, the formations become progressively shaly and arenaceous, suggesting that the sediments were in part derived from uplands located to the east.

Immediately east of the Champlain fault, and as far as 2½ miles north of the Town of Bedford, the Beekmantown Group of formations of Ordovician age and composed mainly of various limestones form northeasterly striking broad asymmetrical folds that plunge northeastward at approximately 6°. The axial planes of the folds dip southeast at roughly 65° and possibly less.

The Beekmantown Group is overlain to the east by sedimentary rocks of Ordovician age named the St. Germain Complex. This Complex comprises the Chazy, Lorraine, Utica, and Trenton Groups of formations, and is characterized by predominantly shaly rocks and lesser impure limestones. The Complex forms a major structure called the St. Albans Synclinorium. The axis of this structure strikes northeast and passes through the southeast corner of the property. The Champlain fault is a major thrust that strikes northeasterly and extends for hundreds of miles. Other faults occur within the region. They generally strike northeast and northwest

Overburden consists of gravel, sand, silty sand, and clay, transported and deposited by glaciers and the Champlain Sea.

TABLE OF FORMATIONS

Age	Group	Formation	Rock Description
Recent	Glaciers and Champlain Sea		Unconsolidated boulders, gravel, sand, silty sand, clay.
	UNCONFORMITY		
ORDOVICIAN	St. Germain Complex	Trenton Utica Lorraine Chazy	Slates, interbedded shale and limestone, limestone, limestone conglomerate.
	LOCAL DISCONFORMITY		
	Beekmantown	St. Armand	Interstratified dark limestone, nodular limestone, sandy limestone, light limestone.
		Solomons Corner	Nodular limestone
		Luke Hill	Sandy limestone

LOCAL GEOLOGY

At the time of mapping the property, the only geological information available was the G.S.C. Sutton Area, Paper 63-34, Map 38-1963, by P.R. Eakins. The map covers only the eastern part of the claim group and the various formations are not described in detail. For these reasons, the description and outlining of various formations in this report and on the accompanying map sheets, are to a certain degree tentative.

The western half of the claim group is underlain by various limestones of the Beekmantown Group and represented by the Luke Hill, Solomons Corner, and St. Armand formations. The Luke Hill formation forms a broad anticlinal fold, striking and plunging northeasterly and with its nose near the settlement of Rosenberg. It occurs east of Rock River.

The Luke Hill formation is overlain by the Solomons Corner formation. On the property it is well exposed, although intricately folded, near the nose of the Luke Hill formation anticline, and on its northwest limb. One outcrop also occurs on the eastern limb of the anticline southeast of Rosenberg.

The St. Armand formation overlies the Solomons Corner formation and occurs mainly west of Rock River. It forms a broad synclinal fold, striking and plunging northeasterly and with its nose south of the international boundary.

The valley of Rock River appears to follow the surface trace of a major fault.

The eastern half of the claim group is underlain by rocks of the St. Germain Complex. They overlay rocks of the Beekmantown Group and are locally disconformable with these. Although various rock units were mapped, not enough outcrops were found to correlate these units and interpret their structures.

DESCRIPTIVE GEOLOGY

BEEKMANTOWN GROUP:

Luke Hill Formation:

This formation is made up of sandy limestone with a finely crystalline texture. When fresh, it has a light buff colour and weathers to a rusty brown colour. It is cut by numerous reticulating quartz stringers. The sand consists of medium sized rounded quartz grains. In places the sand constitutes over 50% of the rock. The rock has a massive appearance and bedding is rarely obvious.

The true thickness of this formation cannot be ascertained on the property. However, the reconnaissance traverse made west of the property along the international boundary, shows that the formation in this locality has a true thickness of 300 feet.

The uranium values located by Soquem occur in this formation.

Fifty per cent of the formation occurs on Soquem's property and fifty per cent on the El Coco ground.

Solomons Corner Formation:

The formation is made up of interstratified massive limestone and nodular limestone. The thickness of individual stratum varies from 6 inches to 15 feet. The massive limestone is of a dark colour when fresh and weathers to bluish grey. The nodular limestone is thinly bedded, individual beds being ½" thick, or less. The nodules are formed of a dark coloured limestone, weathering to bluish grey. They are interbedded with dark calcareous shale and shale, respectively, weathering to a brown and black colour. On the property, this formation has an approximate true thickness of 100 feet. Along the international boundary west of the property it has a true thickness of 225 feet.

St. Armand Formation:

This formation is made up of interstratified rocks similar to the Luke Hill and Solomons Corner formations, with dark massive limestone that weathers to a bluish grey colour, and some light grey massive limestone that weathers to a buff brownish colour. The dark massive limestone strata are predominant. Some of these measure as much as 150 feet in true thickness. Generally, the true thickness of the strata is less than 15 feet. The thickness of this formation is unknown.

ST. GERMAIN COMPLEX:

Shale and Limestone:

This rock unit is thinly bedded, with individual beds up to 1" thick. The colour is dark on fresh and weathered surfaces. Its occurrence was noted near Soquem's showing, north and south of the international boundary. Here, it overlays the Luke Hill formation. Immediately south of the boundary, one outcrop of the Luke Hill is approximately 20 feet away from an outcrop of this rock unit. These two outcrops will be discussed again in Structural Geology, under the heading "Local Disconformity".

Slates:

On the property, the slates form the most abundant rock unit mapped within the St. Germain Complex. They are dark when fresh, weathering to a bluish tinged dark colour. The cleavage is well developed.

Limestone:

This rock is massive. It is dark when fresh, and weathers to a bluish grey colour.

Limestone Conglomerate:

This rock is characterized by limestone pebbles ranging in size from 1 inch to 1 foot. The limestone is dark when fresh and weathers to a bluish grey colour. There are also dark slate fragments. The matrix consists of sandy limestone. In one outcrop, this rock unit had a true thickness of approximately 30 feet.

STRUCTURAL GEOLOGY

Folding:

Two major folds were mapped. One is an anticline bordering the western boundary of Soquem's property. The other is a syncline located west of Rock River. From observations made of smaller folds, and attitudes of beddings made on and outside of the property, these folds appear to be asymmetrical. Their axes strike in a north-northeastward direction, and plunge at approximately 6 degrees in the same direction. The axial planes dip southeast at approximately 65° and possibly less. Locally, the east limb of synclines and the west limb of anticlines are overturned. Numerous smaller folds that are subsidiary to the major ones were mapped. With the exception of a few small folds located southwest of Rosenberg, which have double plunging attitudes, they generally have the same attitudes as the larger folds.

Faulting:

On the accompanying map sheets, a major fault has been drawn following the valley of Rock River. However, no direct evidence has been seen to support this. It is inferred from the following: firstly, the United States geological maps show a fault that would line up with its location; secondly, from reconnaissance mapping done west of the property along the international boundary, it is difficult to correlate by folding, the formations occurring on both sides of the fault; thirdly, the valley of Rock River is a good topographic linear. One northwest striking small fault was observed west of Rosenberg. Two northerly striking small faults are inferred southwest of Rosenberg.

Local Disconformity:

Two outcrops were seen south of the International Border and near Soquem's showing to support the idea that the St. Germain Complex is in places disconformable. These outcrops show the Luke Hill formation approximately 20 feet away from thinly bedded dark shale and limestone very likely belonging to the St. Germain Complex. The Solomons Corner formation would be expected to occur here, as it does on the east limb of the major anticline, southeast of Rosenberg. Facies changes of such suddenness appear impossible in this situation. Major faulting would explain the situation. However, the rocks in both outcrops do not display any disturbances or supporting features for this approach.

ECONOMIC GEOLOGY

No uranium mineralization as is occurring in Soquem's showing was noted in the course of mapping the property. The showing occurs in the Luke Hill formation, and on surface this formation is distributed 50-50 on the Soquem and the El Coco properties. Traces of pale zinc sulphides were observed occurring here and there in the Luke Hill formation.

CONCLUSIONS AND RECOMMENDATIONS

A uranium geochemical soil survey was carried out concurrently with the geological mapping work. The results of this survey will be awaited before reaching any conclusions and recommending further work.

A few visits were made to Soquem's showing and the following observations and conclusions were made. The uranium values are associated with black fragments of various shapes. These fragments appear to be shale fragments derived from another formation and deposited in and near the eroded surface of the Luke Hill formation. The local disconformity of the St. Germain Complex at the same locality as the showing supports this theory.

No features were observed to support a hydrothermal approach, and the shape, composition, and distribution of the fragments preclude a fault breccia. From this it is concluded that the most favourable areas to look for uranium within the region is where the St. Germain Complex is locally disconformable.

Respectfully submitted,

Yvon Bruneau

YB:MW