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REPORT ON THE MOUNT ST-HILAIRE PROPERTY

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Énergie et Ressources naturelles
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REPORT ON THE MOUNT ST. HILAIRE PROPERTY OF CHESS URANIUM CORPORATION LTD.

QUEBEC DEPARTMENT OF MINES
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MINERAL DEPOSITS BRANCH
No G M- 9198

John D. Godard B.A. MSc

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INTRODUCTION

The following report is a compilation of the work which has been carried out on the Mount St. Hilaire property of Chess Uranium Corporation during the past year within the present knowledge of the writer.

PROPERTY

The Chess Uranium Corporation Limited currently holds the rights to a group of claims totalling approximately 1100 acres which cover the south-west portion of Mount St. Hilaire in Rouville County in the Province of Quebec.

The claims are as follows:

C	76875	Cl. 1, 4, 5
C	80821	Cl. 1, 2, 3, 4, 5
C	81916	Cl. 1, 3, 4, 5
C	81917	Cl. 1, 2, 3, 4, 5
C	81937	Cl. 1, 2, 3, 4, 5
C	82556	Cl. 1, 2, 3, 4
C	89789	Cl. 1, 2, 3, 4
C	89790	Cl. 1, 2, 3, 4, 5
C	89792	Cl. 1, 2, 3, 4
C	89794	Cl. 1, 2, 3
C	89795	Cl. 1, 2, 3, 4

CADASTRAL LOTS	103 to 120
	120A
	121 to 145
	213 to 215
	218

CADASTRAL LOTS (Cont'd)

221 to 224
301 to 327
331 to 376
391 to 394
400 to 406
417 to 419

All of the above are part of the official cadastral plan of the Parish of St. Hilaire, Seignory of Rouville, electoral district of Rouville, P.Q.

LOCATION AND ACCESS

Mount St. Hilaire is situated in the parish of St. Hilaire, Rouville County, Quebec, approximately twenty (20) miles east of the City of Montreal.

Route No. 9, between Montreal and Quebec City passes within a few miles of the mountain. A good paved side road from the town of Beloeil leads from the highway to the village of Mount St. Hilaire. From this point two gravel roads and several trails provide easy access to almost all parts of the claims.

The main line of the Canadian National Railway from Montreal to Levis and Halifax passes through St. Hilaire Station situated at the base of the mountain.

The Richelieu river which passes within proximity of the mountain provides a navigatable water route

for traffic between the St. Lawrence water-way and New York City.

TOPOGRAPHY

Topographically, Mount St. Hilaire is a rudely circular mountain with an area of 6.76 square miles above. the 200 foot contour line. The summit of the mountain is crowned by a number of elevations arranged in crescentric form opening southward about a central depression which contains a small lake. The maximum elevation of 1350 feet above sea level is on the north-west peak, or 1230 feet above the surrounding plain.

The slopes of the mountain are all relatively steep but the inclination is greater towards the north than towards the south.

Hertel Lake a small body of water on the southern flank of the mountain has an elevation of 566 feet, above sea level. The lake is about half a mile in length, about one third of a mile wide and is reportedly very deep. The lake lies entirely within the boundary of the Chess Uranium Corporation ground.

GEOLOGY

Mount St. Hilaire is one of the Monteregian group of intrusives which extends along a gently curving

are in a generally east-west direction from Oka in the west to Megantic mountain in the east, a distance of approximately 140 miles.

It consists of a mass of alkaline igneous rock which rises abruptly above the surrounding generally flat lying Ordovician sedimentary rocks of the St. Lawrence plain.

The western portion of the mountain is composed essentially of Essexite (alkaline gabbro) cut by numerous dykes of a more basic composition. The eastern section consists of a core of porphyritic nephèline-sodalite syenite surrounded by an irregular collar of breccia. Numerous dykes cut both the breccia and the syenite porphyry.

The breccia is composed of a heterogeneous assemblage of fragments consisting of essexite, sedimentary rocks and dyke material enclosed in a syenitic and/or lamprophyric matrix. The fragments range in size from less than a millimeter to some rare blocks, several hundred feet in length.

There is an isolated area of syenite breccia well within the main syenite mass. This breccia does not appear to be related to the main contacts of the intrusive.

The whole igneous mass is intruded into Richmond shales (Ordovician) which has been altered to a hornfels at /or near the contact.

Aplite dykes are found within the main alkaline mass and a few coarse grained pegmatites have been injected into the hornfels collar.

PREVIOUS WORK

The property was originally staked because of the known association of columbium and rare-earth mineralization with nepheline syenite intrusions.

According to Kankama (1950,) columbium and rare-earths are preferentially concentrated in nepheline syenites and in the coarse grained differentiates of nepheline syenite magmas.

Mount St. Hilaire is one representative of the Monteregian Hills conatining this rock type in abundance.

In the course of a comprehensive petrographic study of the mountain for the Geological Survey of Canada in 1913 J.J. O'Neill commented on the presence of a number of minor minerals, notably in the breccia and contact varieties of the syenites. He either made only tentative identifications or classified them as unknown. As a generalization he placed these minerals in the rare-earth group.

Cursory reconnaissance work on the property with a scintillometer and subsequent analysis of a number of grab samples from areas of high radioactivity indicated that values up to 0.23% Cb_2O_5 were present. Some trenching was carried out in areas were above average radioactivity was encountered and/or interesting assays were obtained from surface grab samples.

During the early summer of 1955 a combined magnetometer and scintillometer survey was carried out which indicated several anomalous areas.

Diamond drilling of 12A core holes totalling 4150 feet was carried out in the period between November 1955 and May 1956, to test certain of the anomalies and to follow up certain above average columbium assays. Two additional holes were stopped in overburden at depths of 118 and 45 feet respectively.

Two packsack holes totalling 100 feet were drilled in the vicinity of one of the trenches.

CURRENT PROGRAM

At the present time, concurrent with a detailed field examination of the property an extensive program of laboratory research is being carried out by the writer at the Department of Geological Sciences McGill University on drill core and rock specimens from the property and adjacent ground. The purpose of this investigation is to determine what rare-earth elements are present, the minerals in which they occur and which host rock is the most favourable for their maximum concentration.

The cost of this research program is being shared jointly by the Great Northern Division of the Great Lakes Carbon Corporation and Chess Uranium Corporation Ltd. who currently hold property at Mount St. Hilaire.

To date this program has consisted of detailed field mapping of the mountain on a scale of 1 inch = 400 feet. Orientation in the field was maintained by grid lines set out at 300 foot intervals which covered a considerable portion of the mountain. In areas not covered by the grid, pase and compass traverses were made from offsets taken from known points on the grid to complete the local geology.

In the spring of 1956 a diamond drilling program was carried out with the assistance of the author on the Chess Uranium Corporation ground, Mount St. Hilaire. A total of 12A core holes totaling 4150 feet were drilled in

areas believed to be most favourable for the concentration of columbium and the rare-earth metals.

Assay results from various sections of the drill core may be found in the files of Cess Uranium Corporation Limited, Montreal.

Representative specimens of outcrop and drill core sections believed to contain clues important for the furtherance of the investigation were obtained by the writer and from these approximately 230 thin sections were cut for microscopical examination.

The petrographical study of the thin sections of drill core and rock samples has disclosed the presence in variable amounts a number of minerals to which rare-earth metals are known to have an affinity. Rankama (1) Goldschimidt (2) Winchell (3).

These minerals include the following:

Apatite	$Ca_5F(Po_4)_3$
Fluorite	CaF_2
Yttrocerite (?)	$Ca(YCe)F_3$
Sphene	$CaTiSiO_4$
Zircon	$ZrSiO_4$
Biotite	$K_2(OH)_4(MgFeAl)_6(SiAl)_8O_{22}$

Ægerine (Acmite)	$NaFeSi_2O_6$
Allanite	$CaCeMg_2OHSi_3AlO_{12}$
Zoisite	$Ca_2Al_3(OH)Si_3O_{12}$
Epidote	$Ca_2Al_3(OH)Si_3O_{12}$
Lavenite	(CaNa) (Zr,Cb,Fe, Ti Mn F SiO_4
Garnet	$Fe_3Al_2Si_3O_{12}$

The majority of these minerals occur only as widely disseminated accessory constituents within the various rock types. In some cases only one or two grains were encountered during the course of the study. However, Apatite, Pyroxene, Biotite, Sphene and Zircon were quite prevalent in a number of the slides examined.

Heavy media separations of those minerals deemed most favourable to carry rare-earth elements were made preparatory to X-ray fluorescence analysis. The results of the X-ray analysis are not available at this time.

CONCLUSION

The investigation to date has not revealed any economically important concentrations of rare-earth minerals wit in the property. Widely disseminated occurrences of minerals of which rare-earth metals are known to have an affinity have been observed but the percentage of rare-earths associated within these minerals will not be known until the results of the X-ray analyses are made available.

REFERENCES

(1) Rankama and Sahama - Geochemistry, The University of Chicago Press, 1949 - pp.508-531

(2) Goldschmidt, V.M. - Geochemistry, Oxford University Press London, 1954, pp.306-318

(3) Winchell and Winchell - Elements of Optical Mineralogy Part II - IV Edition John Wiley and Sons Inc. London 1951