

# MAR 19770014: NORTHEASTERN ALBERTA

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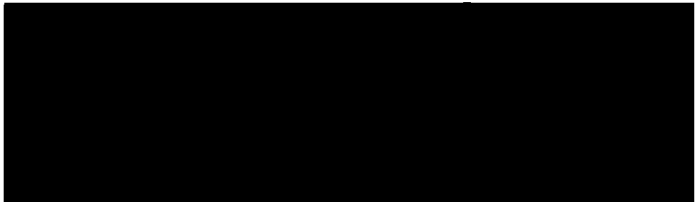
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NORCEN ENERGY RESOURCES LIMITED

FINAL REPORT

QUARTZ MINERAL EXPLORATION  
PERMIT 213

ECONOMIC MINERALS  
FILE REPORT No.  
U-AF-128(1)



G. McWilliams

December, 1977

### QUARTZ MINERAL EXPLORATION PERMIT 213

Great Plains Development Company of Canada, Ltd., a wholly owned subsidiary of Norcen Energy Resources Limited, applied for six (6) Quartz Mineral Permits on September 4, 1975. Permits numbered 208 through 213 were granted on January 28, 1976. During the 1976 field season which spanned from May 14 to August 26, a 7 to 10 man helicopter supported team conducted an exploration program. This exploration program was designed to search for basement unconformity uranium deposits of the type found at the base of the Athabasca Formation in Northeastern Saskatchewan. Exploration included a study of the surficial geology, ground prospecting with scintillometers and a lake bottom geochemical survey.

A complete report of the work carried out during 1976 was submitted to the Alberta Government in January, 1977 (see Norcen Energy Resources Limited, Mining Exploration Department Year-end Report Quartz Mineral Exploration Permits N.E. Alberta by G. McWilliams and D. A. Sawyer, P. Geol.). In addition to the report, the renewal fees and a 1977 work proposal for Quartz Mineral Exploration Permits 208 through 213 was submitted to the government. On March 18, 1977 Quartz Mineral Exploration Permits 208 to 213 were transferred from Great Plains Development Company of Canada, Ltd. to the parent company Norcen Energy Resources Limited. The Alberta Quartz Mineral Regulations have no provision for grouping. Only permits 208, 210 and 211, in which we proposed drill sites, were renewed for the exploration period January 28, 1977 to January 28, 1978. A work proposal was sent in for permit 209 in which we stated that no further work was proposed for permits 212 and 213 and that we were thereby surrendering them to the crown.

A. SUMMARY 1976 WORK PROGRAM

Great Plains Development Company of Canada Ltd., a wholly owned subsidiary of Norcen Energy Resources Limited, acquired six Quartz Mineral Exploration Permits from the Alberta Government along the western margin of the Athabasca Sandstone Basin in January, 1976. An exploration program was designed to search for basement unconformity supergene uranium deposits of the type found along the margin of the Athabasca Sandstone Basin at Rabbit and Key Lakes, Saskatchewan. During the 1976 field season which spanned from May 14 to August 26, a 7 to 10 man helicopter supported team carried out an exploration program which included a study of the surficial deposits, ground prospecting with scintillometers and a lake bottom geochemical survey. This approach was designed to locate boulder trains from any uranium deposit which has been subjected to glaciation and to detect changes in the bedrock below the glacial cover.

The study of the surficial deposits began with a detailed photo interpretation of 1 inch to 1/2 mile air photos by L. Bayrock followed by a 5 day field examination by L. Bayrock and assistant G. Bhile of Bayrock and Reimchen Surficial Geology Limited. This study revealed that much of the surficial cover in northeastern Alberta was carried within the ice and therefore not representative of the underlying bedrock. Ground moraines, which represent scoured material overridden by the ice and, therefore, of local origin are not common in the area. Where present, these areas were examined in detail. Close examination of these areas indicate that at least locally the Athabasca Formation extends further west than indicated on the Alberta Government Geological maps.

A total of 320 man days were spent on ground traverses prospecting with hand held scintillometers. Ground traverses were conducted over all the large boulder fields, ground moraines, eskers and in the areas surrounding lake sediment uranium anomalies. A single radioactive pebble conglomerate boulder was found seven miles east of Archer Lake in a crevasse filling. Three fluorimetric assays from this boulder ranged from 5.2 to 6.2 ppm U308 and .031 to .042% Th02. Radioactive granite boulders were found in clusters in the end moraine ridges and hills east of the Keane fire tower and in crevasse filling complexes south of Helen Lake. Scintillometer counts over large granite boulders (4 to 5 feet in diameter) in these areas produced equivalent uranium and thorium values up to 50 ppm U308 and 200 ppm Th02. A corresponding fluorimetric assay from one of these boulders was 42 ppm U308 and 100 ppm Th02. These granite boulders and the previously mentioned pebble conglomerate boulder occur with material that has been carried within the ice and not of local origin. Since these boulders are found in a down ice direction from the Carswell Dome, it is believed that this is the most likely source area.

A total of 719 lake sediment samples were collected during the field season using a "Hornbrook" sampler. Uranium content of the lake sediments ranged from nil to 18.8 ppm, with a mean of 1.6 ppm, 90 percentile of 3.6 ppm and 94 percentile of 5 ppm U308. The largest anomaly was associated with radioactive granite boulders east of the Keane fire tower. Contoured maps of the lake sediment data indicates that changes in background uranium values appear to reflect changes in the surficial deposits rather than changes in the underlying bedrock.

The pervasive cover of glacial deposits in northeastern Alberta has produced a greater barrier than anticipated. Exploration in this area requires more than the conventional lake sediment survey, boulder tracing technique which has proven successful in other areas. Results from the surveys conducted during the 1976 field season do not isolate specific uraniferous target areas. Future work in this area will require tools which penetrate this cover and allow one to better define the underlying geology. Information of this type augmented with the information gathered this year will provide a more complete evaluation of the permit areas.

#### RECOMMENDATIONS

A thick and pervasive cover of glacial deposits make surficial evaluations of the permits difficult and in parts of the permits impossible. All information collected during the 1976 field season indicates that the western boundary of the Athabasca Formation is much further west than previously thought. In light of this information large sections of the Great Plains quartz mineral exploration permits should be surrendered to the Crown.

BUDGET SUMMARY FOR N.E. ALBERTA URANIUM PROGRAM

The following summary includes all costs incurred in the program, including estimates costs to October 1. Note figures in parenthesis have been estimated.

<u>Contractors and Consulting Fees</u>		\$ 13,743.37
Base Map and Lineament Study (Geophoto)	\$ 6,287.50	
Geochemical Consulting (██████████)	955.87	
Surficial Study (██████████)	(6,500.00)	
<u>Equipment Rentals and Chemical Analysis</u>		11,393.45
Scintillometers (McPhar & Exploranium)	6,236.95	
Radio Telephone (A.G.T.)	(784.00)	
Chemical Analysis (Loring)	(4,372.50)	
<u>Helicopter and Fixed Wing</u>		78,466.56
Bell 206 (Shirley)	55,620.93	
Helicopter Fuel (ESSO)	(5,822.19)	
Camp mob. and demob. (La Ronge)	(11,011.00)	
Service Flights (Contact)	2,804.60	
Other Transportation	3,207.84	
<u>Salaries</u>		38,730.75
Geologists, Assistants & Cook @ 55/day	37,230.75	
Supervision @ \$100/day	1,500.00	
<u>Camp Construction and Maintenance</u>		10,973.72
Equipment and Construction	10,026.64	
Food	5,413.13	
Other	1,533.95	
		<hr/>
		\$153,507.85
Overhead @ 5% 55,620.93	2,781.05	
Overhead @ 10% 95,875.92	9,768.69	
		<u>\$166,057.59</u>

1977 WORK PROPOSAL

QUARTZ MINERAL EXPLORATION  
PERMITS 208 - 213

Submitted by: G. McWilliams, Geol.  
D.A. Sawyer, P. Geol.

INTRODUCTION

Great Plains Development Company of Canada, Ltd. applied for 6 quartz mineral exploration permits on September 10, 1975. Quartz mineral exploration permits 208 to 213 were granted on January 28, 1976.

During the 1976 field season, which spanned from May 14 to August 26, a 7 to 10 man helicopter supported team carried out an exploration program which included a study of the surficial deposits, ground prospecting with scintillometers and a lake bottom geochemical survey. This approach was designed to locate boulder trains from any uranium deposit which had been subjected to glaciation and to detect changes in bedrock below the glacial cover. The cost of conducting this program was \$166,000 or 65¢ per acre.

On January 28, 1977 a yearend report and maps giving complete details of the 1976 exploration program, a cheque for \$25,607.20 renewal fees, and a proposed program for 1977 was submitted to the Mining Recorder in Edmonton. The enclosed proposal is an expansion of the proposal as requested by Mr. Johnston in his letter dated February 16, 1977.

Quartz Mineral Exploration Permits 208 - 213 are presently held by Great Plains Development Company of Canada, Ltd. a wholly owned subsidiary of Norcen Energy Resources Limited. These permits are presently in the process of being transferred from Great Plains to the parent company Norcen Energy Resources Limited.



WORK PROPOSAL 1977 PROGRAM  
PERMITS 208 - 213  
LAKE ATHABASCA REGION - NORTHEASTERN ALBERTA

SYNOPSIS OF 1976 WORK PROGRAM

The pervasive cover of glacial deposits in northeastern Alberta has produced a greater barrier to exploration than anticipated. Exploration to evaluate the uranium potential in this type of terrain requires more than the conventional surface prospecting techniques. Information gathered during the past year indicates that the depth to the base of the Athabasca Formation may far exceed our original estimates when the permits were taken out. If these new estimates are correct, the exploration for and recovery of uranium deposits at the base of the Athabasca Formation would be cost prohibitive. It is our aim to determine the thickness of the glacial overburden and the Athabasca Formation within our permit areas by drilling to basement. I believe a working estimate of the thickness of the Athabasca Formation within our permits could be achieved by a minimum of three holes spaced 10 to 15 miles apart.

PROPOSED EXPLORATION PROGRAM  
for  
QUARTZ MINERAL EXPLORATION PERMITS 208-213 FOR 1977

The 1977 drilling program would consist of three holes drilled to the base of the Athabasca Formation approximately fifteen miles apart. One of the holes would centre on a lake sediment uranium anomaly located during the 1976 exploration program and the other two located in areas accessible to a DC 3 aircraft equipped with skis. The depth of each hole would be dependent on the thickness of the Athabasca Formation with a maximum depth of 1,000 feet. The drilling would be done with a Longyear 38 with an oversized head of 44 or equivalent diamond drill, recovering NQ (1 7/8") diameter core.

Location of Holes (see accompanying maps)

- A. Township 107 Range 5 West of the 4th Meridian, Section 25
- B. Township 107 Range 2 West of the 4th Meridian, Section 28
- C. Township 104 Range 2 West of the 4th Meridian, Section 11.

Access

Access to the area would be via a ski-equipped DC 3 or equivalent aircraft chartered from Fort McMurray. The drill would be skidded with its winch from the ice to the shore and on to the drilling site in the muskeg bay of the lake.

Camp

The camp would consist of three 14 X 16 plywood framed tents, for the 6 man crew.

Clearing

Clearing away of trees will be kept to an absolute minimum necessary to pitch the tents and work around the drill. The total clearing necessary for the camp and drill site will be approximately one half acre.

Schedule

Since the best access to the area is via ski mounted aircraft, the program will begin as soon as sufficient ice builds up over the lakes.

ENERGY AND  
NATURAL RESOURCES

Telex 037-3676  
Petroleum Plaza — South Tower  
9915 - 108 Street  
Edmonton, Alberta, Canada  
T5K 2C9

May 11, 1977

ATTENTION: Mr. D. A. Sawyer,  
P. Geol.

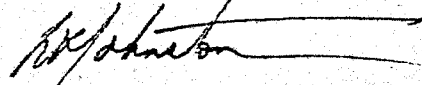
Gentlemen:

Re: Quartz Mineral Exploration  
Permit Nos. 209, 212 and 213

With reference to your 1977 work program proposed on Quartz Mineral Exploration Permit Nos. 208 to 213 inclusive, it is noted that three holes were to be drilled on Permit Nos. 208, 210 and 211 and no exploratory work was proposed for Permit Nos. 209, 212 and 213.

As there is no provision in the Quartz Mining Regulations for the grouping of permits work must be carried out on each permit. Consequently, the Department cannot favorably consider renewing Quartz Mineral Exploration Permit Nos. 209, 212 and 213 for a period of one year commencing January 28, 1977 unless a plan of examination to be conducted on each of Permit Nos. 209, 212 and 213 is received by the Department.

Yours very truly,

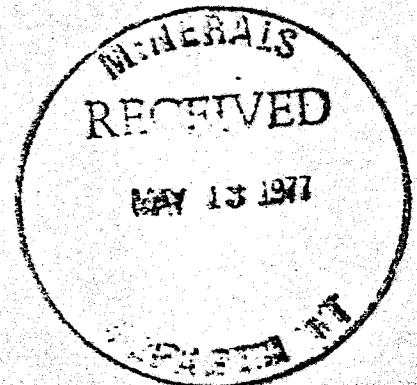


P. Batke,  
Supervisor of  
Exploratory Agreements.


LKJ:kr

Norcen Energy Resources Limited,  
715 Fifth Avenue South West,  
CALGARY, Alberta.

T2P 2X7



IN THE MATTER OF Quartz Mineral Exploration Permit No. 213

I,  of the city  
of Calgary Province of Alberta

do solemnly declare that the total cost of  
the exploration program conducted  
on Quartz Mineral Exploration Permit  
213 during the period January  
28 1976 to January 28 1977 was  
seventeen thousand seven hundred  
and ten dollars

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

Declared before me at the Norcen Tower  
of Calgary in the Province  
of Alberta, this 7th  
day of December, A.D. 19 77



J. D'Almeida  
J.P. or Commissioner for Oaths  
in and for the Province  
of Alberta

U-AF-128

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# QUARTZ MINERAL EXPLORATION PERMIT No. 213

