MAR 19690046: NORTHEASTERN ALBERTA

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REPORT ON QUARTZ MINERAL PERMITS 135 & 136, IN THE PROVINCE OF ALBERTA.

for

FRANK S. LIEBER,
10126 100 Street,
Edmonton, Alberta.

by

Anthony Rich

and

John A. Greig,

Department of Geology,
University of Alberta,
Edmonton, Alberta.

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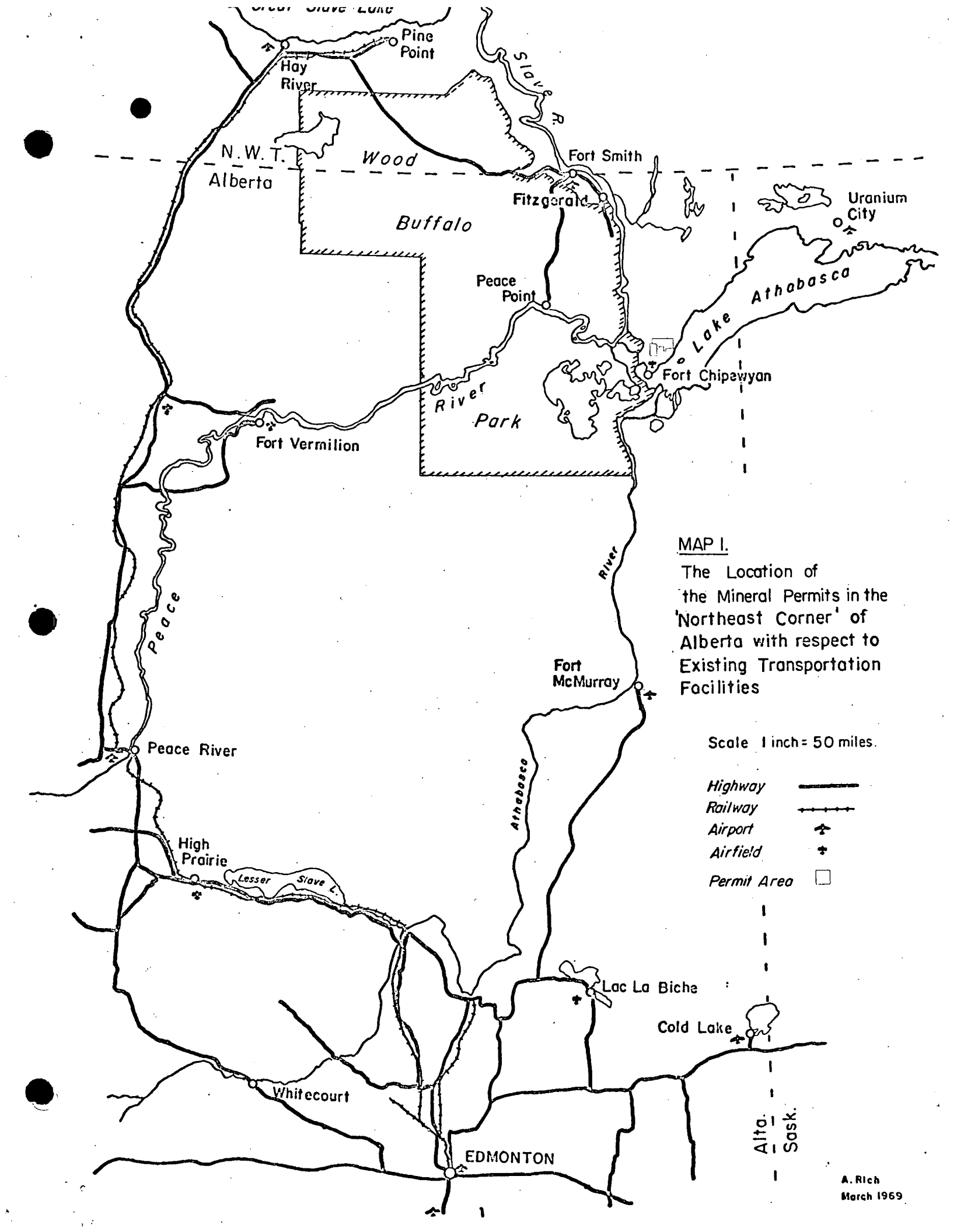

Great Slave Lake
Pine Point
Hay River
Slave R.
N.W.T.
Alberta
Wood Buffalo
Fort Smith
Fitzgerald
Uranium City
Peace Point
Lake Athabasca
Fort Chipewyan
River
Park
Fort Vermilion
Peace River
Fort McMurray
Athabasca River
Peace River
High Prairie
Lesser Slave L.
Lac La Biche
Cold Lake
Whitecourt
EDMONTON
Alta. - Sask.
MAP I.
The Location of the Mineral Permits in the 'Northeast Corner' of Alberta with respect to Existing Transportation Facilities
Scale 1 inch = 50 miles.
Highway
Railway
Airport
Airfield
Permit Area
A. Rich
March 1969

INTRODUCTION

Quartz Mineral Exploration Permits 135 and 136 are situated in the Northeast Corner of Alberta. The permits have areas of 19,840 and 9,600 acres respectively. The permits were taken to cover favourable structures in an area where uranium mineralization is known to occur.

LOCATION AND ACCESSIBILITY

The permits lie about twelve miles northeast of Fort Chipewyan. The eastern edge of permit 135 lies within a mile of Lake Athabasca. The permits are at a latitude of about 58° 57' N and a longtitude of 111° 00'W.

Numerous lakes within each of the permit areas provide easy access to float equipped aircraft based in Fort Chipewyan (distance of about 12 miles), Fort McMurray (150 miles), Fort Smith (70 miles) and Uranium City (100 miles). All the ground in both permits is accessible by foot from camps located on the numerous lakes.

GEOLOGY

The NE Corner of Alberta is entirely underlain by Precambrian metamorphic rocks. Metamorphic grades vary regionally and extend through the range from greenschist to upper amphibolite facies, and possibly to granulite facies (based on the work of Godfrey, Alberta Research Council, 1958-68).

The major structural features of the Precambrian of NE Alberta and NW-Saskatchewan are given on Map 2. This is a compilation based on published reports by the following governmental offices : Research Council of Alberta, Geological Survey of Canada, and Saskatchewan Dept. of Mineral Resources.

Localization of Uranium deposits - Uranium City and NE Corner

Uranium City Area

Intensive study by many geologists in the Uranium City area points to the following common denominators in the control of uranium mineralization.

Faulting - The approximately twenty mines which have been in operation, together with the many uranium occurrences, demonstrate a very close association with shear zones and minor faults which tie in with the major structures. Broad mylonite belts are associated with the NE-SW striking faults, and there is evidence to suggest that the uranium is genetically related to the process of mylonization. The intersections of faults striking E-W with faults striking NE-SW are, statistically, particularly favorable loci for uranium.

Folding - Dilatancies along the axes of minor folds serve as structural receptors for mineralization in several mines in the area (e.g. Eldorado). In each such case the folds are in close proximity to faults and, therefore, constitute a structural control secondary to the fault.

Lithology - There does not appear to be any consistent lithological control for uranium in the Beaverlodge Area; the host rocks span almost the complete range of lithologies found in the region. Most uranium deposits are found in the 1820-2200 million year old (Baadsgaard[2]) Tazin group of gneisses and metasediments. The Tazin rocks are regionally metamorphosed and the grade of metamorphism ranges from greenschist to granulite facies.

NE Corner

Radioactive occurrences in the NE Corner have been known since at least 1953 when a discovery was made north of Fidler Point (Fishing Lake). Godfrey has noted many radioactive occurrences while carrying out detailed mapping of the extreme NE corner during the period 1958 - 68. The occurrences are noted in Preliminary Report 58-4[1] (Research Council of Alberta), which covers an area of only between 5% and 10% of the Precambrian of NE Alberta. The following are the three most notable occurrences found by Godfrey.

1. On the Southwest arm of Andrew Lake radioactivity of 6 times background was noted in biotite schist and feldspathic quartzite. The full extent is not known. This ground is held by Rapid River Mines (see attachment).

2. A level of radioactivity 4 to 5 times background is associated with an occurrence at Spider Lake (Godfrey[1]) and may extend for a strike length of about 2 miles. Grab samples assayed as follows: 1.03%U - .69% Mo; 3.93%U - 1.03% Mo; 3.29%U - 1.40% Mo. This property is covered by a permit held by McIntyre Porcupine Mines Ltd.

3. Numerous occurrences have been found in the vicinity of Cherry Lake. One of these radioactive occurrence continues for at least 150 feet along strike and 400 feet across strike. This ground is held by McIntyre.

The three occurrences cited above occur in metasediments.

At least three important uranium occurrences are documented in the area outside that covered by Godfrey [1]. . One of these, the Fishing Lake discovery, occurs in granite, granite gneiss and pegmatite (see attachment). High grade uranium over narrow widths has been reported for the Leggo Lake showing where the host rock is a "black hornblende granite".

According to Collins and Swan[3], "four miles N 40° E of Allison Bay, yellow stains of alteration products were observed over an area of 30 feet by 400 feet, and, at one locality where surface blasting had been undertaken, a radioactive anomaly was found that reached a maximum of 10 times background on a geiger ratemeter". The host rocks are granite.

Little is known of the structural control for the occurrences noted by Godfrey. These may be localized along the axes of isoclinal folds close to major cross faults. The Fishing Lake, Leggo Lake and Allison Bay deposits are located along fracture zones striking E-W to NE-SW.

Detailed Geology of Permits 135 and 136

The area included by permits 135 and 136 was mapped on a reconnaissance scale by Riley[5], in 1958. Only a very general impression of the rock types present can be gained from Riley's mapping. The rock types underlying the permits (according to Riley) are shown on Map 4.

About one third of the permit area is underlain by metasediments, one third by orthogneiss. The remainder is underlain by rocks which Riley calls - undivided plutonic and metamorphic rocks. (Map 4). Foliations strike generally northeast-southwest. Dips are steep and to the northwest or southeast.

The regional structure of the area is shown on Map 2 (attached). The Allan fault strikes NE-SW through the eastern part of the permit area. The Allan fault is characterized by a wide zone of mylonites, which are at least several miles in width where mapped further north by Godfrey. A second structural system, comprising a set of sub-parallel WNW-ESE cross faults, transects the Allan fault mylonite zone within the permit area (see Map 5).

About four miles north of Sand Point, a strong system of ENE-WSW faults intersects the shore-line of Lake Athabasca. This system continues through Loutit Lake and transects the north half of the Permit area (Maps 2 & 5). This could be an extension of the Beaverlodge system. It is possible that the Athabasca mylonite zone and the Allan fault intersect, and, in part, merge in the region of the permits.

A system of N-S trending minor faults occur over the whole area. These faults appear to cut all other structures and are probably tensional in nature.

ECONOMIC POTENTIAL

In all likelihood, the rocks in the NE Corner are equivalents of the Tazin group, which is the host rock for most of the uranium deposits in the Beaverlodge area of Saskatchewan. The metamorphic grades and ages are the same.

Only a small portion of the NE Corner has been mapped in detail and the remainder has been prospected in only a very cursory fashion. It is thought highly significant that, in spite of the lack of detailed work, so many important uranium deposits have been found to date in the area.

The geological environment of permits 135 and 136 is considered highly favourable for the localization of uranium, for the reasons outlined below :-

The structural environment is almost identical with that of the Beaverlodge area, where the NE-SW Athabasca system of mylonites is transected by a strong zone of E-W faults. Within permits 135 and 136 an important system of ESE-WNW faults similarly cuts a wide NE-SW mylonite belt (the Allan fault).

The Athabasca system can be extrapolated to extend beneath Lake Athabasca, just south of Fidler Point, and may merge with the Allan fault system in the region of the permits.

The important controls of mineralization in both the Beaverlodge area and the NE Corner are structural, ie. faults; and fold axes close to faults. The permit areas are characterized by a very high density of cross cutting faults. Not enough detailed work has been done to comment on the frequency of folding in the permit area. It can be stated, however, that isoclinal folding is prevalent throughout all of the Precambrian in the NE Corner. The metasedimentary areas of the permits should be particularly favourable because of their susceptibility to this type of folding.

Mylonization is probably very important. There is evidence to suggest that the uranium may be derived from the mylonites and subsequently localized in cross faults.

Uranium showings occur on permit 123 and copper on permit 124. Both these permits are adjacent, to the south. All the showings occur along the strike of the Allan fault, but appear to be localized near N-S and NW-SE fault intersections. The deposits change from copper sulphides, through silver to uranium, along strike. The association of copper and silver with uranium on a regional scale, is common throughout the world. These showings could continue along strike, onto permit 135. The cross faults strike onto permit 136.

RECOMMENDED PLAN FOR EXPLORATION

The first phase of the exploration program should be to obtain a fairly detailed picture of the geology of the permit areas. Mapping and prospecting could be carried out by a two man crew, with supervision, over a two to three month period. Mapping should be done in greater detail in the neighbourhood of favourable structures. Scintillometers should be carried on all traverses.

The percentage of rock outcrop in the area is high. However, to supplement the geological and radiometric coverage of the area, soil or vegetation samples (geochemical or biogeochemical) could be collected. These could be taken at intervals of about 500 feet. The cost at this stage would be simply that of the sample bags. They could be analysed later for uranium and copper, if this is deemed feasible.

An airborne scintillometer (spectrometric) survey is being arranged to cover the area. The survey should be completed by mid-June. It should be emphasised at this point that, even with the most modern equipment, an airborne radiometric survey is still a reconnaissance tool. Its use would in no way preclude the work of the ground party. It could considerably accelerate the exploration by outlining targets for investigation.

The costs are estimated for three phases of exploration, below. If a find of any significance is made in phase 1, then phase 2 should be considered. To complete this phase the field season may need to be extended or the number of men increased.

The operations indicated in Phase 3 are, of course, contingent upon the success of the previous phase.

COSTS

Phase 1

Equipment - purchase (boat, motor, camp etc)	$ 1,500
- rental (scintillometers, radio)	$ 1,000
Camp operating costs	$ 2,000
Mapping, prospecting and supervision (2 months)	$ 5,500
Airborne radiometric survey (this cost is based on a rate of $10.50/line mile; 1/8 mile line spacing.	$ 5,000
	$15,000

Phase 2

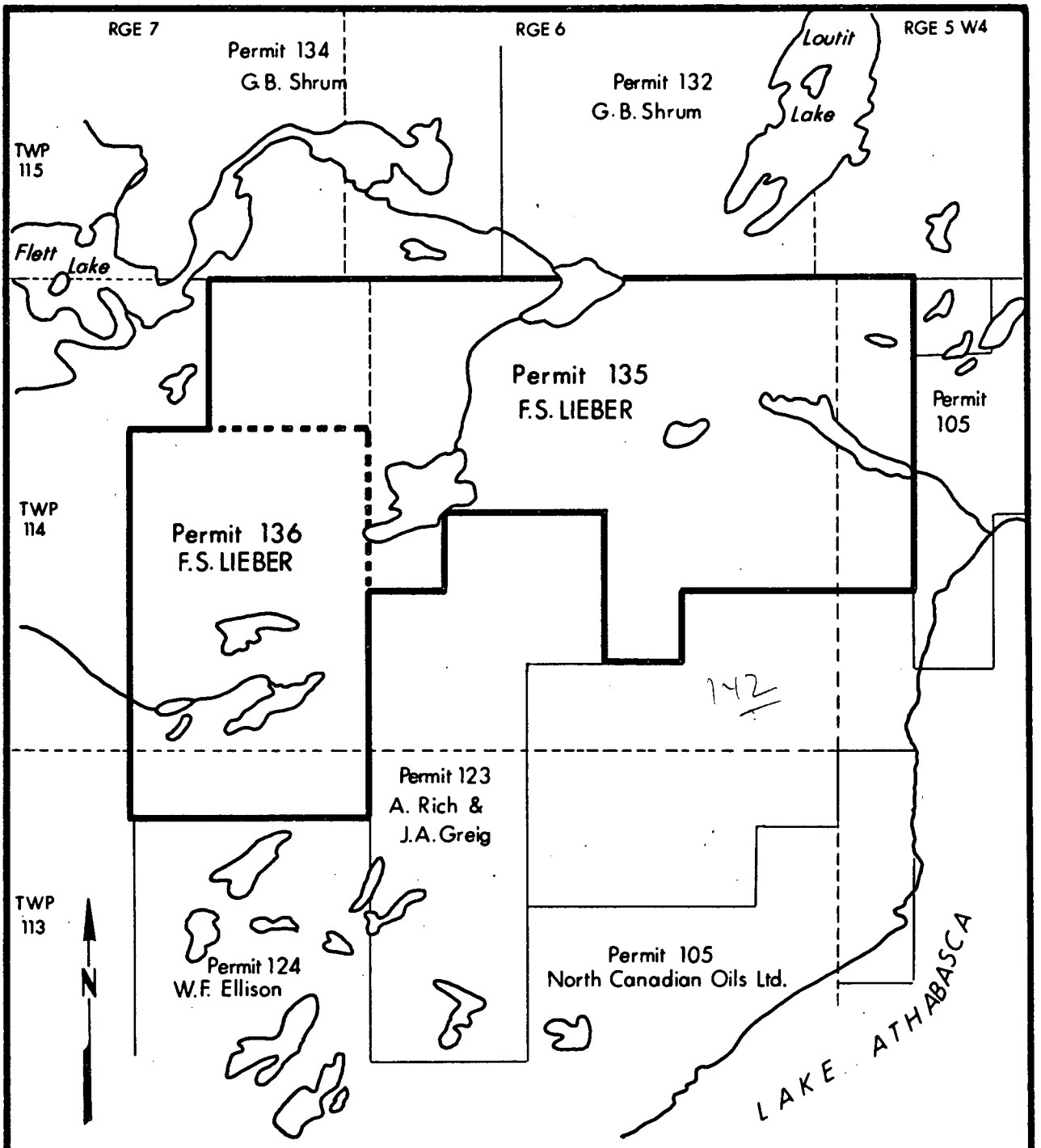
Detailed mapping	$ 2,000
Detailed ground geophysics	$ 2,000
Trenching, sampling, assays and supervision	$ 2,000
	$ 6,000
Optional:	
Geochemical analyses	$ 2,000

Phase 3

Diamond drilling	$10,000
Supervision	$ 3,000
Sampling and assays	$ 1,000
Camp	$ 2,000
	$16,000
Total	$39,000

Respectfully submitted,

Anthony Rich John A. Greig



LOCATION OF MINERAL PERMITS- 135 & 136 IN NORTHEASTERN ALBERTA.

SHOWING THE OWNERSHIP OF ADJACENT PERMITS.

SCALE IN MILES

0 1 2 3

A. RICH
J.A. GREIG

April 28, 1969

F.D.

MAP 3.

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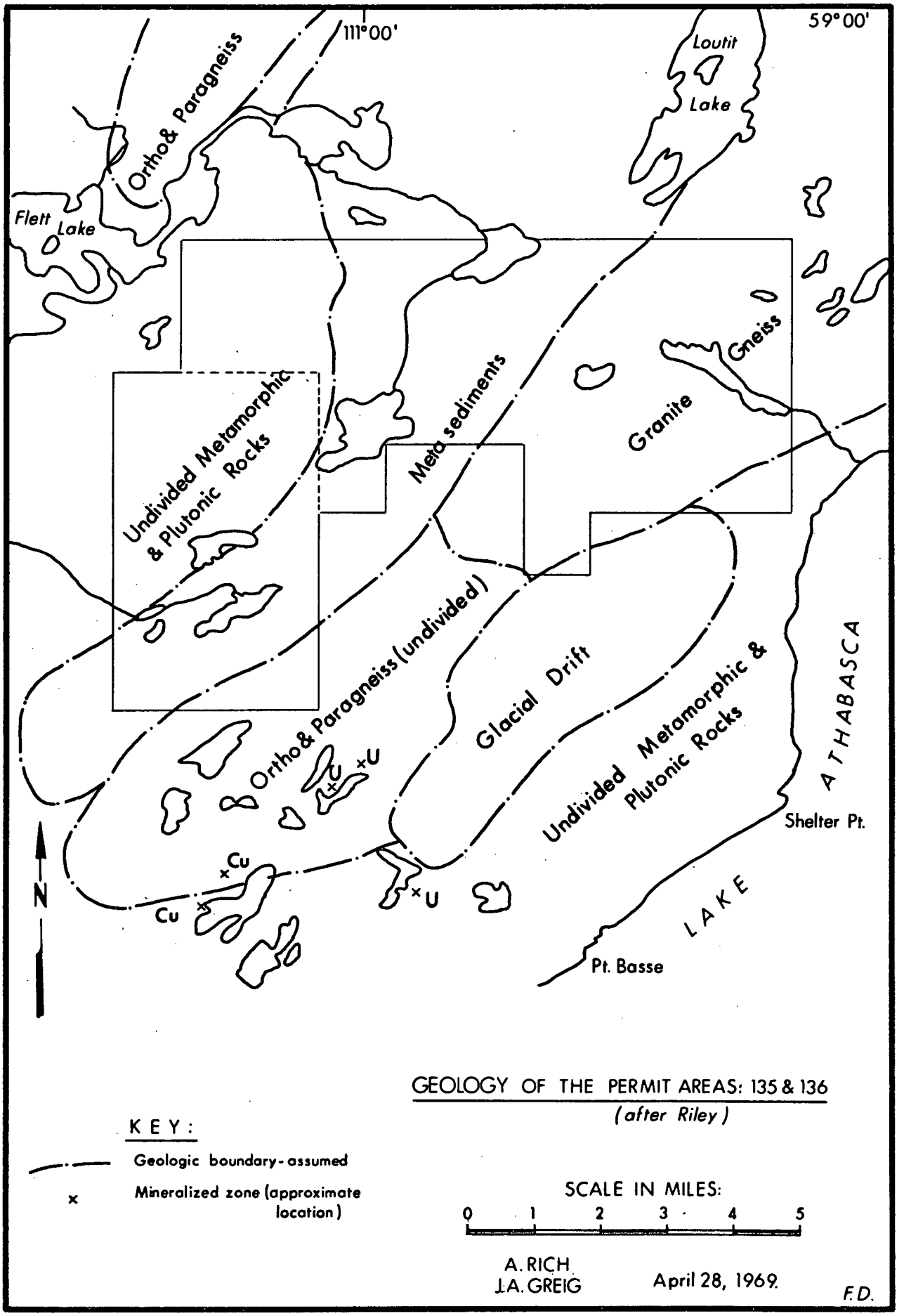
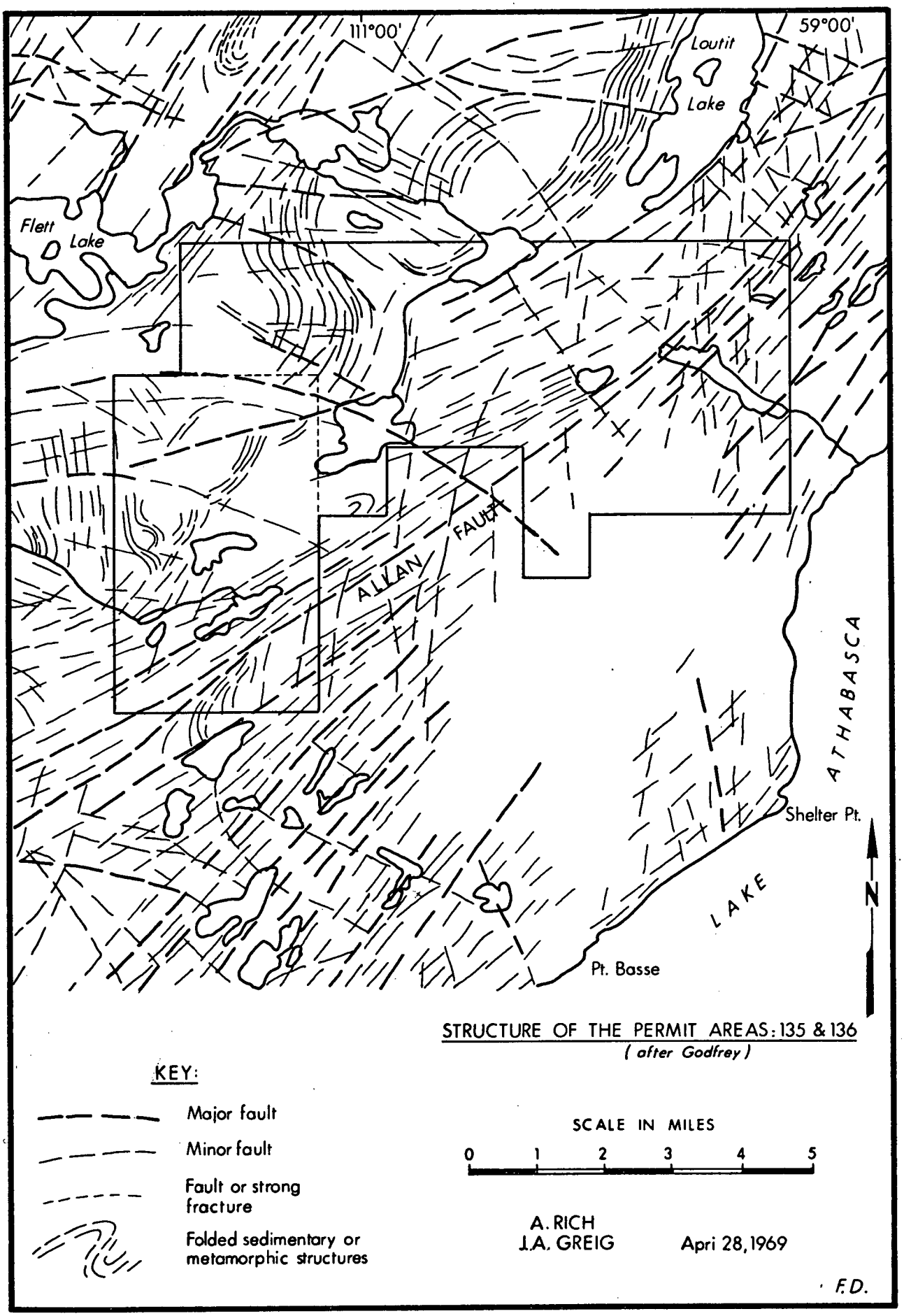


MAP 4.

1969 00 46



MAP 5.

1969 00 46

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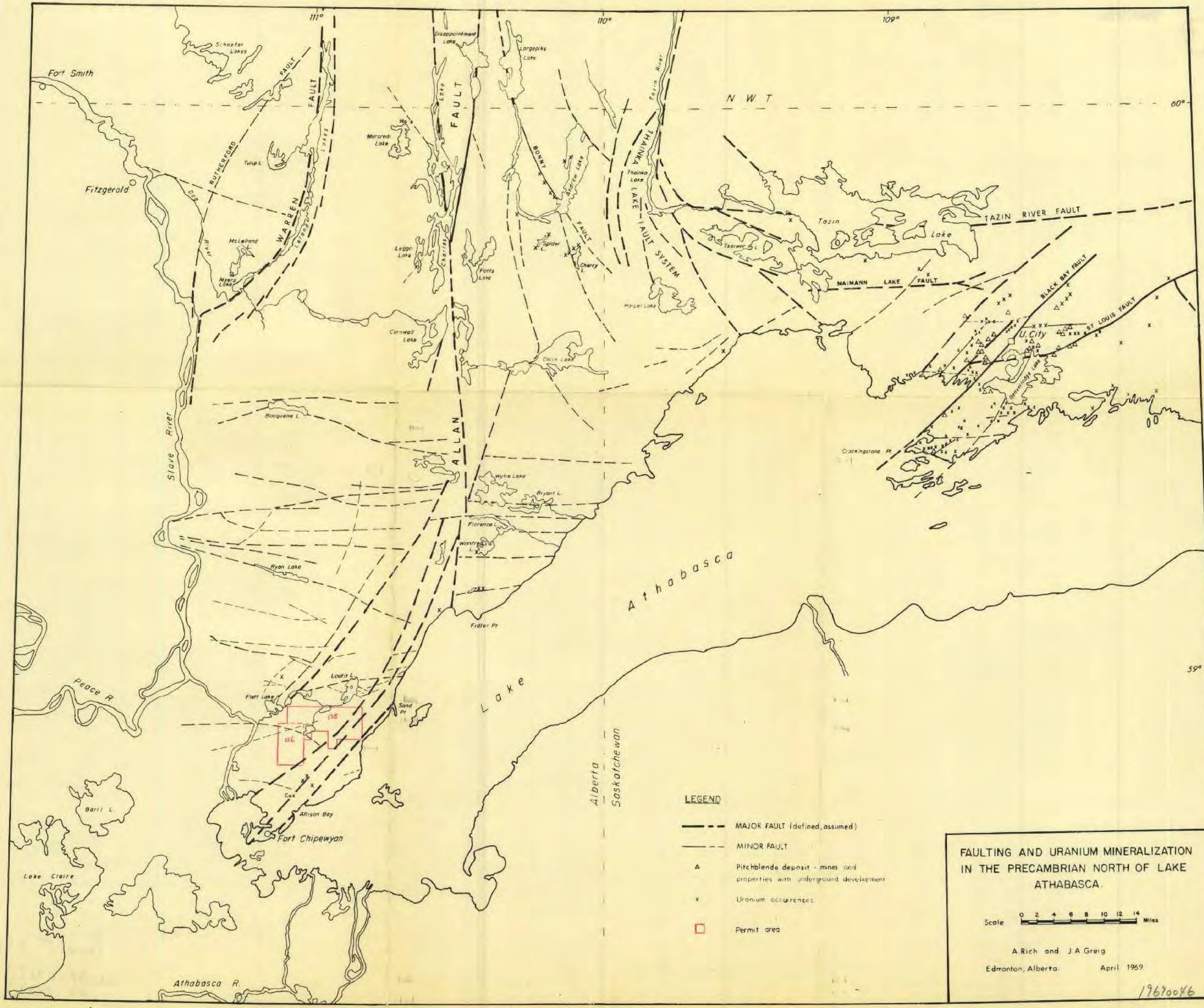
4. Godfrey, J.D.; (1958); Aerial Photographic Interpretation of Precambrian Structures North of Lake Athabasca; Res. Counc. of Alberta; Bull. No. 1.

5. Riley, G.C.; (1960); Geology, Fort Fitzgerald, Alberta; Geol. Surv. of Can.; Map 12-1960.

FAULTING AND URANIUM MINERALIZATION IN THE PRECAMBRIAN NORTH OF LAKE ATHABASCA.



LEGEND

- MAJOR FAULT (defined, assumed)
- MINOR FAULT
- △ Pitchblende deposit - mines and properties with underground development
- × Uranium occurrences
- □ Permit area

Scale 0 2 4 6 8 10 12 14 Miles

A. Rich and J.A. Greig

Edmonton, Alberta. April 1969

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MAP 2. to Accompany Report on Permits 135 & 136

QUARTZ MINERAL EXPLORATION PERMIT No.135

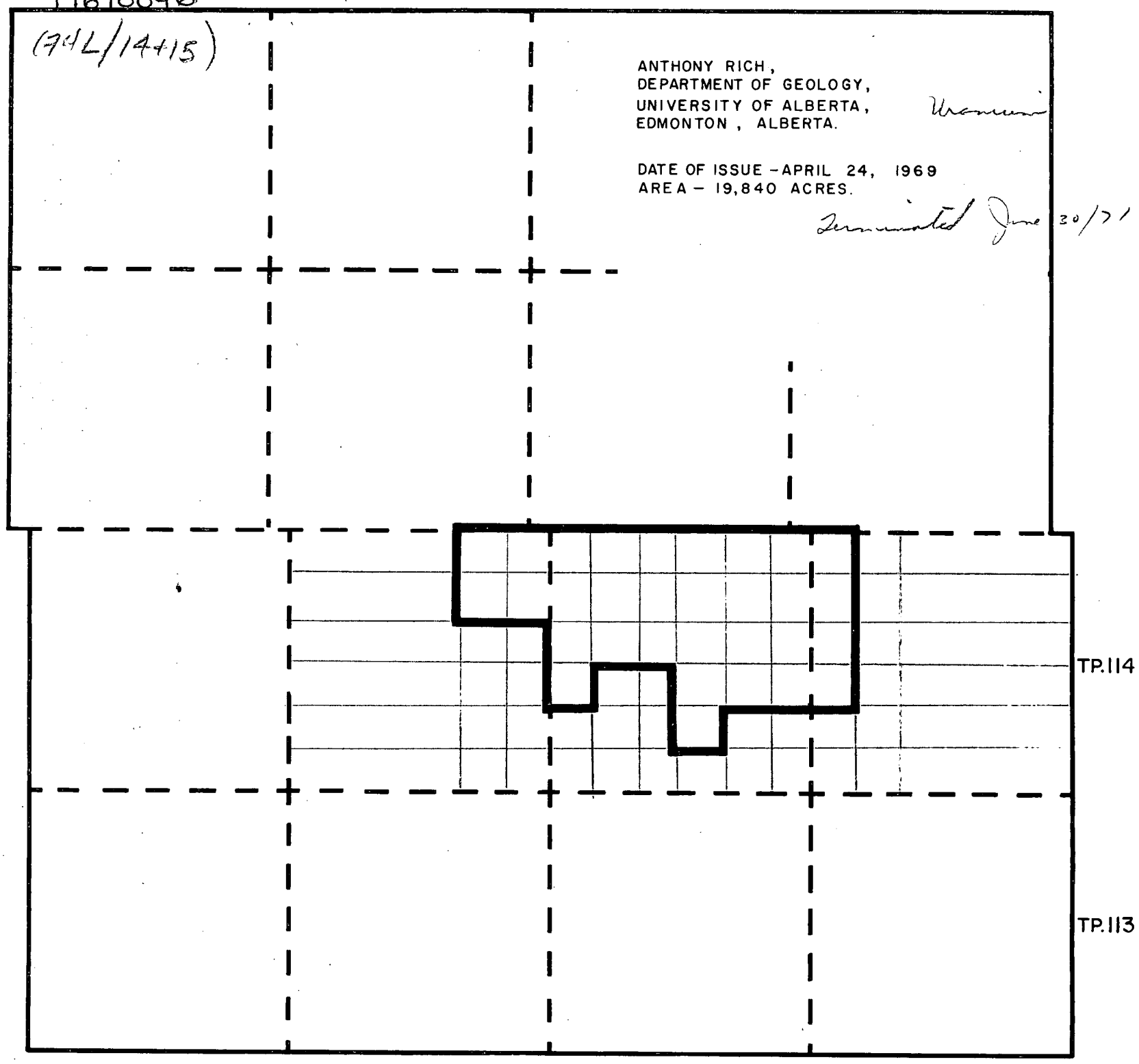
19690046

(74L/14+15)

ANTHONY RICH,
DEPARTMENT OF GEOLOGY,
UNIVERSITY OF ALBERTA,
EDMONTON, ALBERTA.

DATE OF ISSUE - APRIL 24, 1969
AREA - 19,840 ACRES.

Terminated June 30/71



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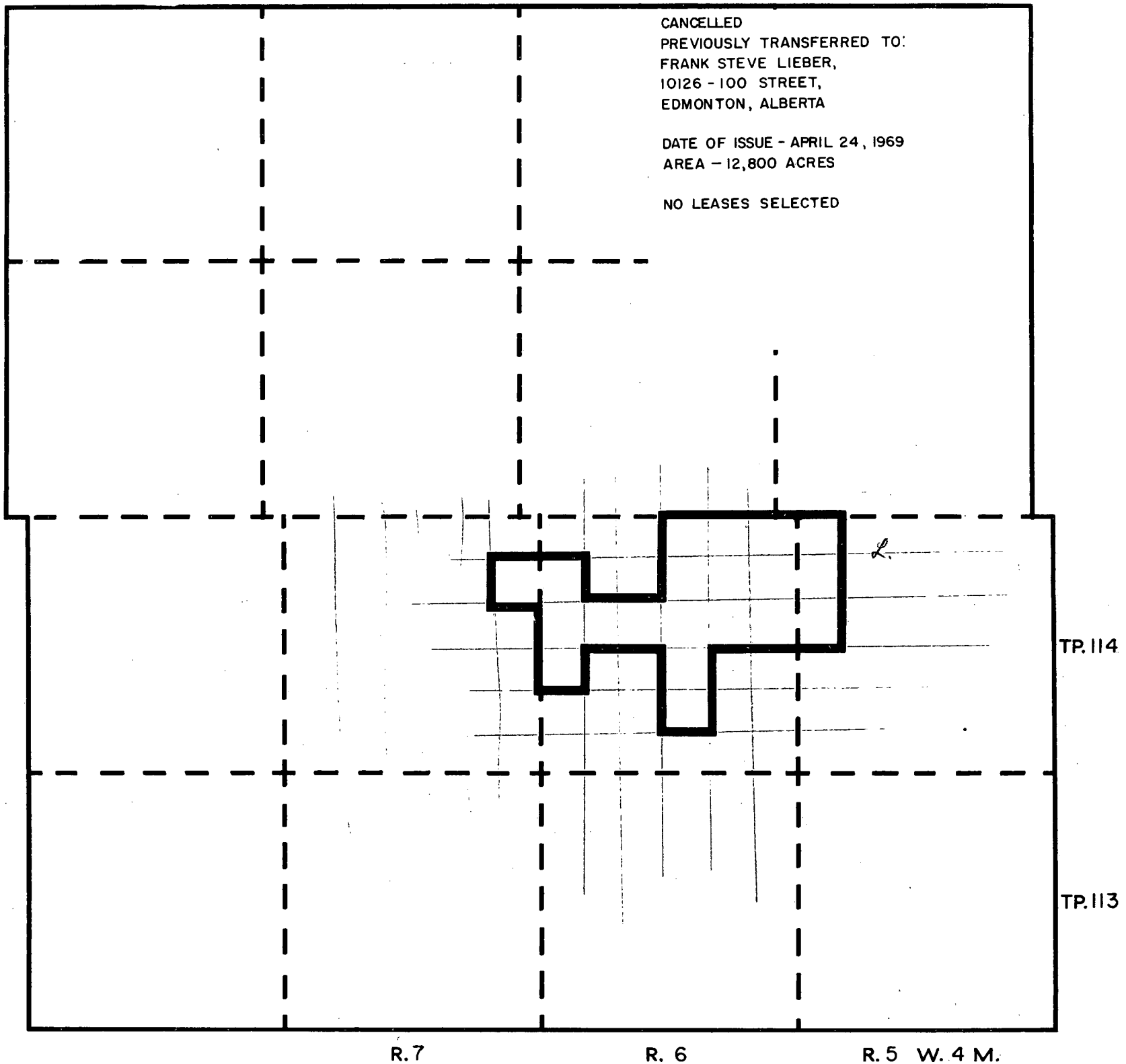


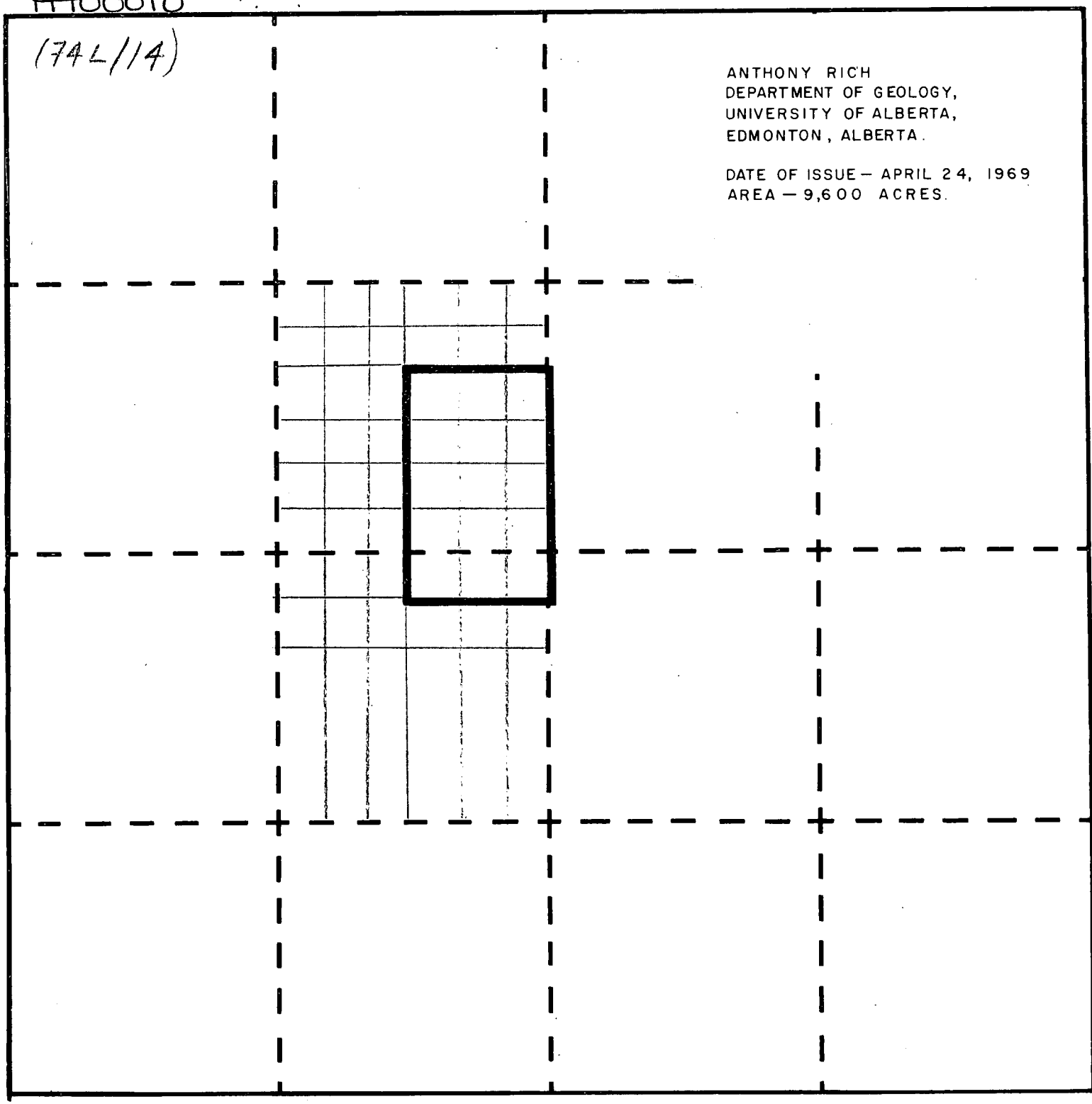
QUARTZ MINERAL EXPLORATION PERMIT No.136

19690046
19700010

(74L/14)

ANTHONY RICH
DEPARTMENT OF GEOLOGY,
UNIVERSITY OF ALBERTA,
EDMONTON, ALBERTA.

DATE OF ISSUE – APRIL 24, 1969
AREA – 9,600 ACRES.



QUARTZ MINERAL EXPLORATION PERMIT No. 136