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GEOLOGICAL REPORT

EXPLORATION PERMITS 111 AND 112,

NORTHEASTERN ALBERTA

by

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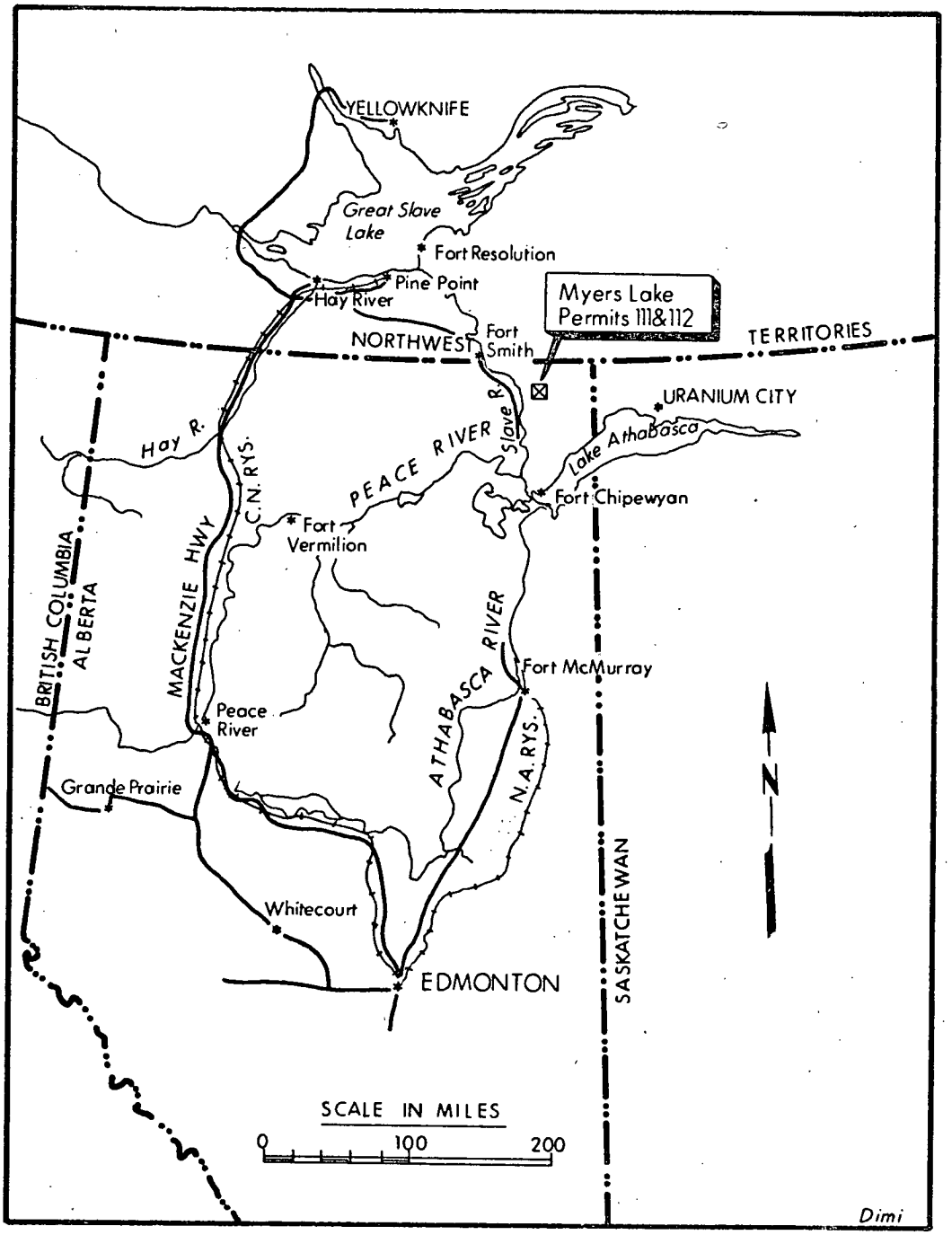

LOCATION MAP
MAP 1.

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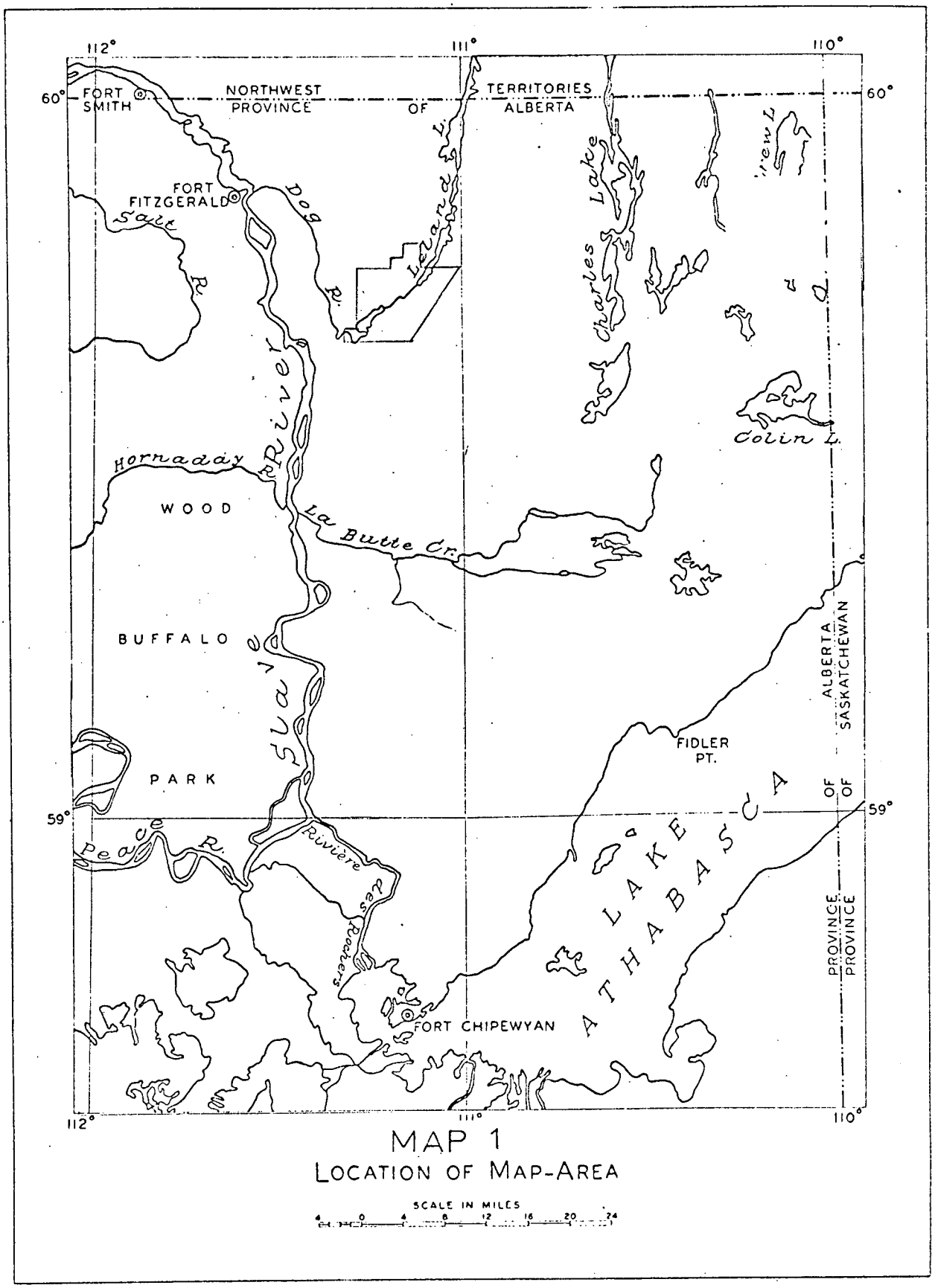

MAP 1

LOCATION OF MAP-AREA

SCALE IN MILES

SUMMARY

Quartz Mineral Permits 111 and 112, presently held by Vestor Explorations Ltd., were prospected and mapped on a reconnaissance basis during August of 1970. Results of this work have verified the presence of several radioactive anomalies previously indicated by an airborne radiometric survey.

Geologic mapping on a scale of 1" = 2/3 mile has delineated the Warren fault zone and distinguished five lithologic units. The fault zone consists of mylonite and granite gneiss with granites and porphyroblastic granite gneiss on either side.

INTRODUCTION

This report presents the results of a geological investigation of Quartz Mineral Permits 111 and 112 in the northeastern corner of Alberta. These permits are presently held by Vestor Explorations Ltd. and cover an area of 29,440 acres.

An airborne radiometric spectometer survey performed in 1969 by Geo-X Surveys Ltd. outlined eight anomalous areas within permit 112. The radiometric anomalies all occur within the Warren fault zone mapped by Godfrey (1958) and Riley (1960) or along younger northwest-southeast striking minor dislocations. The Warren fault strikes northeast-southwest across a complex of Precambrian rocks equivalent in age to the Tazin group of Beaverlodge, Saskatchewan, and is structurally and lithologically similar to the Beaverlodge district.

The primary objectives of the investigation were :

1) To carry out a ground geological and radiometric survey to

determine the extent and nature of anomalous areas recorded by the airborne radiometric survey.

2) To map in detail the lithological and structural variations in the vicinity of anamalous areas, and to map potentially prospective areas within the two permits.

3) To prospect for indications of base metal mineralization.

LOCATION AND ACCESSIBILITY

Quartz Mineral Exploration Permits 111 and 112 are located in the northeast corner of Alberta at approximately latitude 59°43'N and longitude 111°10'W. Map 1 shows the location of the permits.

Access to the area is by canoe along the Slave and Dog Rivers to the Myers Lake - Leland Lake chain or by float equipped aircraft based in Uranium City (100 miles E), Fort Smith (30 miles NW) or Fort Chipewyan (70 miles SE). A shallow stream with numerous beaver dams and several portages connects Myers Lake and Leland Lake, however, navigation between the two lakes is difficult.

PHYSIOGRAPHY

Maximum topographic relief in the permit areas is on the order of 250 feet, with elevations ranging from approximately 700 to 950 feet above sea level. A terrain of low rounded hills and ridges with extensive muskeg development in the valleys is characteristic of the area. Vegetation is relatively sparse in the higher sectors but is extremely dense in the muskeg and valley areas.

Bedrock exposure is quite variable within the permits. Approximately

eighty percent of the northwest half of the permit area is outcrop, whereas, less than fifty percent of the southeast half of the area is outcrop.

Traverses across the geologic "grain" of the area are difficult due to numerous small streams, extensive beaver dams, and dense vegetation in the northeast-southwest trending valleys.

GENERAL GEOLOGY

Permits 111 and 112 are underlain by a Precambrian complex of igneous and metamorphic rocks believed to be 1800 to 2200 million years old (Godfrey and Baadsgaard, 1962). Previous geological work was carried out in the area by Godfrey (1958) and Riley (1960). Godfrey (1958) delineated the major geologic structural patterns in the area by detailed examination of aerial photos and Riley (1960) mapped the area on a scale of 1" = 4 miles. An airborne radiometric survey was performed by Geo-X Surveys Ltd. in 1969.

The most striking feature of the area is the prevailing north-northeasterly trend and steep northwest to near vertical attitude of the major geologic features. The Warren fault zone, clearly defined by the Leland Lake - Myers Lake chain, cuts southwesterly across the permits. This fault zone is a broad (approximately two miles wide) zone mapped by Riley (1960) as containing an othogneiss series within the shear zone and bounded by granites. A younger set of northwest-southeast trending minor dislocations cut the main Warren fault zone.

GEOLOGY OF QUARTZ MINERAL PERMITS 111 AND 112

Detailed geologic mapping has outlined five distinct lithologic units within the area of permits 111 and 112 (Map 2). These are : Porphyroblastic Granite Gneiss, Granite Gneiss, Mylonite, Grey Granite, Pink Granite.

The most prominent feature is the general N 30°E strike and steep (70° - 85° NW) dip of the rocks.

Map 2, with Godfrey's (1958) and Riley's (1960) outline of the Warren fault system superimposed, reveals several significant points.

1. The Warren fault zone consists of mylonite and granite gneiss surrounded by granite and porphyroblastic granite gneiss.

2. The most highly sheared zones mapped, mylonite and sheared granite gneiss, coincide with the fault zone as mapped by Godfrey (1958), and are interpreted to represent the areas of the shear zone.

3. Airborne radiometric anomalies and ground anomalies occur predominantly within the porphyroblastic granite gneiss. The sheared granite gneiss contains one anomaly. Weak anomalies occur within the pink and grey granites.

4. Mineralization is confined to the mylonite zone.

5. All but one of the radiometric anomalies occurs on the periphery of the Warren fault zone.

A detailed discussion of the major rock types, radiometric anomalies, and mineralization follows.

ROCK TYPES

Porphyroblastic Granite Gneiss

Granite gneiss with white to pink subhedral elongate feldspar porphyroblasts from one- half to one and one-half inches in size aligned subparallel to foliation; in a medium grained matrix composed of 85 - 90% pink potassium feldspar, 5 - 10% quartz, and 5% mafics (biotite). Foliation in this rock type is poorly developed, trending N30°E to N55°E. The foliation decreases in intensity to the southeast becoming almost non-existent. The size of the porphyroblasts also decreases to the southeast in both the Myers Lake and Leland Lake areas.

Banded Granite Gneiss

Quartzo-feldspathic granite gneiss with equigranular, fine to medium grained, pink to red feldspars, smokey-blue quartz and minor biotite. The composition is 35 - 45% quartz, 50 - 60% feldspar, and 5% mafic (biotite). Gneissosity is well developed with a strike of N28°E to N55°E and dipping 60 - 70° NW. Small quartz veins occur parallel to gneissosity.

This unit is characterized by locally alternating bands (several inches to several feet wide) of mafic and felsic material, producing a distinct color banding. The bands are well defined and laterally continuous, but where the gneiss is leucocratic the distinct banding is replaced by lenticular quartz grains and an alignment of biotites giving the foliated character to the rock. Where distinct banding occurs, the mafic bands are subordinate. Strong shearing with partial melting and separation of phases could give rise to felsic-mafic banding. Disseminated pyrite and pyrrhotite (?) are present within the mafic bands.

Mylonite (over)

Mylonite (cont'd)

Rocks of this group are highly altered and recrystallized being glassy to vitreous in character. Feldspar augen are common, and a streaked or banded matrix is characteristic. A relatively narrow garnetiferous zone (several hundred feet wide ?) has been included in this group, the presence of garnets being the major difference in hand specimens.

Both texture and color of this group vary considerably. Texture varies from aphanitic to fine grained glassy to medium grained; whereas, color varies from dark grey-green to reddish. Shistosity is developed locally.

Minor pyrite and pyrrhotite mineralization was noted within this unit.

Grey Granite

This unit is grey on both fresh and weathered surfaces. Its grey color is due to the presence of grey colored feldspars and light smoky-blue quartz. Mafics consisting of chloritized biotite and minor muscovite range in content from 3 to 5% whereas, the quartz content varies from 8 to 30%; the remainder of the rock consists of grey feldspar.

The quartz and feldspar form a medium grained, equigranular, generally massive matrix. Weak foliation is present being expresses by alignment of biotite flakes. The foliation decreases in intensity northwest of Myers Lake. A few small quartz veins, approximately parallel to the foliation, occur within this rock type.

Pink Granite

The pink granite is characterized by its reddish pink color on both fresh and weathered surfaces, the pink color resulting from the reddish to pink

color of the potassium feldspar.

This unit is texturally similar to the grey granite. Mafics vary from less than 3 to 5% and consist essentially of chloritized biotite. The quartz content varies from 8 to 30% and is smoky-blue in color.

Foliation is similar to that described for the grey granite, again with intensity decreasing to te northwest away from Myers Lake.

MINERALIZATION

Uranium.

A ground radiometric investigation was carried out on the uranium anomalies outlined by the airborne radiometric survey. Anomalies A, B, C, D, E, and F (Prospectus, 1970) within permit 112 were investigated in detail.

The ground investigation indicated one new anomaly in addition to the indicated airborne anomalies on permit 112. No anomalous areas were encountered within permit 111. Results of the ground investigation over each airborne anomaly follow. Radiation readings are expressed as counts per minute (cpm) measured at waist level, unless specifically indicated otherwise.

Anomaly A

This is the largest of the airborne anomalies. Ground prospecting has outlined an extensive area of radiation in excess of 2000 cpm, often increasing to 3500 cpm (Map 3). Radiation of 5000 cpm was encountered in a small fault zone (approximately 3' wide; strike N55°E, dip vertical); however, staining was not found.

This anomaly occurs along the southeastern edge of the Warren fault zone and occurs in the porphyroblastic granite gneiss. Background

radiation of the porphyroblastic granite gneiss is variable between 200 - 500 cpm, indicating that radioactivity in the anomalous area is 6 - 15 times normal background.

Anomalies B, C, and D.

Mapping has shown that the two small anomalies, B, outlined by the airborne survey, occur within the porphyroblastic granite gneiss. Radiation over the area is relatively constant at .05 - .09 MR/HR (approx. 1500 cpm). It should be noted that these two small anomalies coincide with areas of outcrop.

Due to limited outcrop, it is difficult to determine if "background" radiation is lower or if the radiation observed is true "background". The anomalies (B) occur along the same trend as anomaly A and may represent areas of porphyroblastic granite gneiss enriched in uranium. No size estimate is possible for "anomaly" B.

Anomalies C and D were not investigated in detail by the ground survey because of time limitations and relatively small amounts of outcrop in the area. However, a cursory traverse carried out near anomaly D indicated that this anomaly is related to the porphyroblastic granite gneiss containing anomalies A and B.

Anomaly E

The airborne radiometric survey outlined this anomaly at the southwest end of Myers Lake.

A TV-5 discriminating scintillometer was available in this area along with an SSL-2 total count scintillometer, for prospecting. The TV-5 scintillometer was used to measure only uranium and thorium radiation (T2), thus removing variable background radiation. A weak anomaly (2 x

background) is indicated by the TV-5 between McLelland and Myers Lakes but total counts (300 - 500 cpm) show no systematic variations (Maps 3 and 4).

Mapping indicated that this "anomaly" occurs in a weakly foliated pink granite.

Anomaly F

Airborne anomaly F, situated at the northeast end of Myers Lake occurs within a weakly foliated grey granite. This anomaly was investigated using the TV-5 discriminating scintillometer and a total count scintillometer. Again total counts show no systematic variations but the uranium and thorium counts show a weak anomaly of 2 x background (Maps 3 and 4).

Anomaly #1

This anomaly, outlined by the ground survey, is situated on the south end of Myers Lake, and occurs within the granite gneiss unit. Background radiation in the granite gneiss is consistent at 200 to 400 cpm. Total radioactivity of the anomalous area varied from 1100 to 4000 cpm, indicating radioactivity 5 to 20 times normal background. The anomaly covers an area approximately 200 yards wide by 600 yards long, however, only one very small zone, approximately 30 feet square, measured 4000 cpm.

Base Metal Mineralization

Zones of base metal mineralization are confined to the mylonite and granite gneiss units. Mineralization within the granite gneiss occurs only in the mafic bands. The mineralized zones encountered contained only minor amounts of disseminated sulfides and were not encouraging.

Two small mineralized zones have been noted on permit 112 near the

mouth of the Dog River on the south end of Myers Lake. Minor amounts of disseminated pyrite, pyrrhotite and chalcopyrite occur at these two locations (Map 2).

No zones of base metal mineralization were found on permit 111.

CONCLUSIONS

The reconnaissance survey has verified the existence of radioactive anomalies within permit 112. Anomalous areas exhibiting radioactivity from 5 to 20 times background are situated to the southeast of Myers Lake, occurring primarily within the porphyroblastic granite gneiss, although one anomaly occurs within the granite gneiss unit. All radiometric anomalies occur on the periphery of the Warren fault zone. No anomalies were found in permit 111.

No significant shows of base metal mineralization were found, however, two small shows were noted in permit 112.

RECOMMENDATIONS

It is recommended that :

1. Trenching be carried out on Anomaly A and Anomaly #1 to further evaluate the uranium mineralization.

Respectfully Submitted

[redacted]

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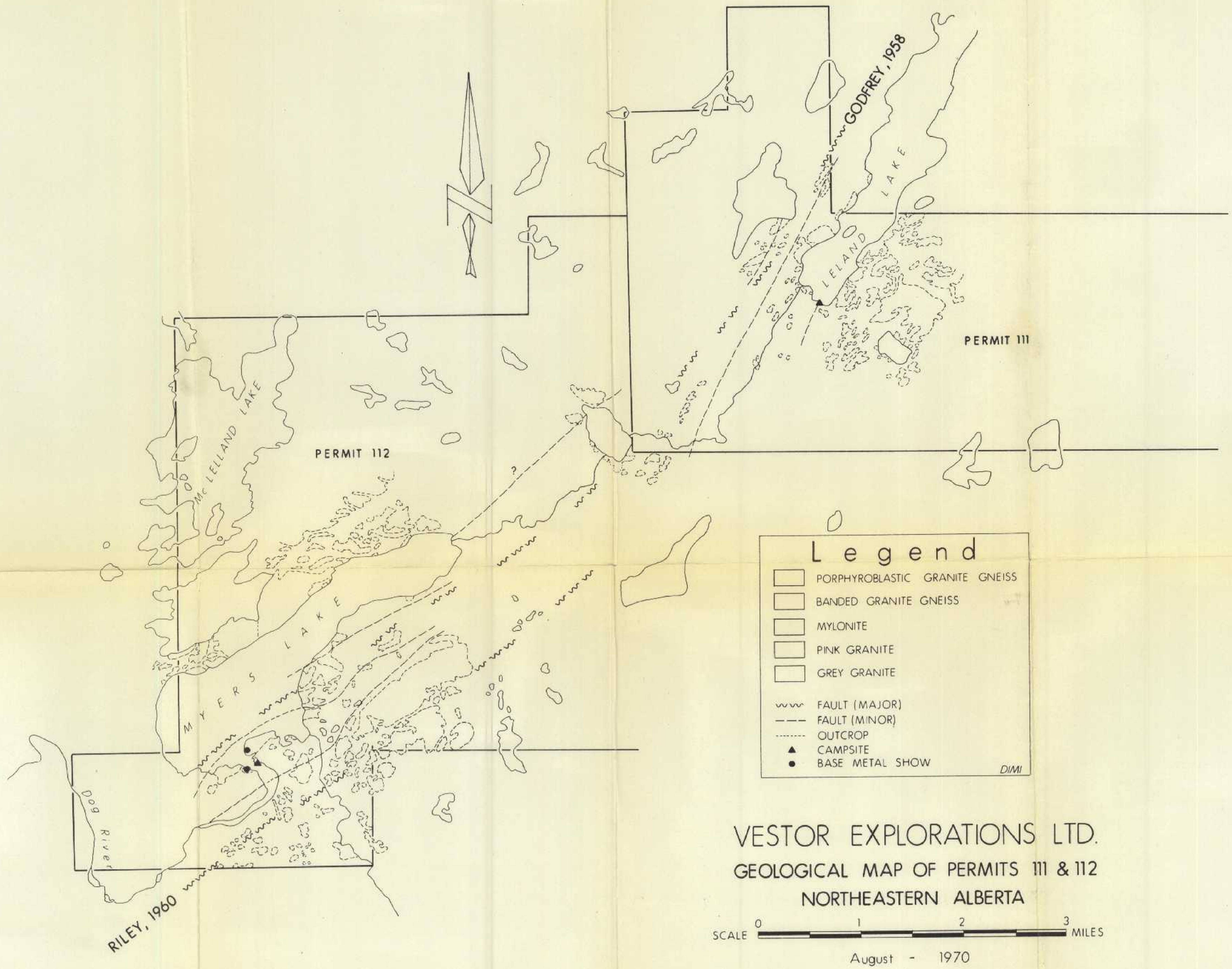

Legend

- PORPHYROBLASTIC GRANITE GNEISS
- BANDED GRANITE GNEISS
- MYLONITE
- PINK GRANITE
- GREY GRANITE
- FAULT (MAJOR)
- FAULT (MINOR)
- OUTCROP
- CAMPSITE
- BASE METAL SHOW

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VESTOR EXPLORATIONS LTD.

GEOLOGICAL MAP OF PERMITS 111 & 112

NORTHEASTERN ALBERTA

SCALE 0 1 2 3 MILES

August - 1970

by

Dr. H.H.Williams

Map 2
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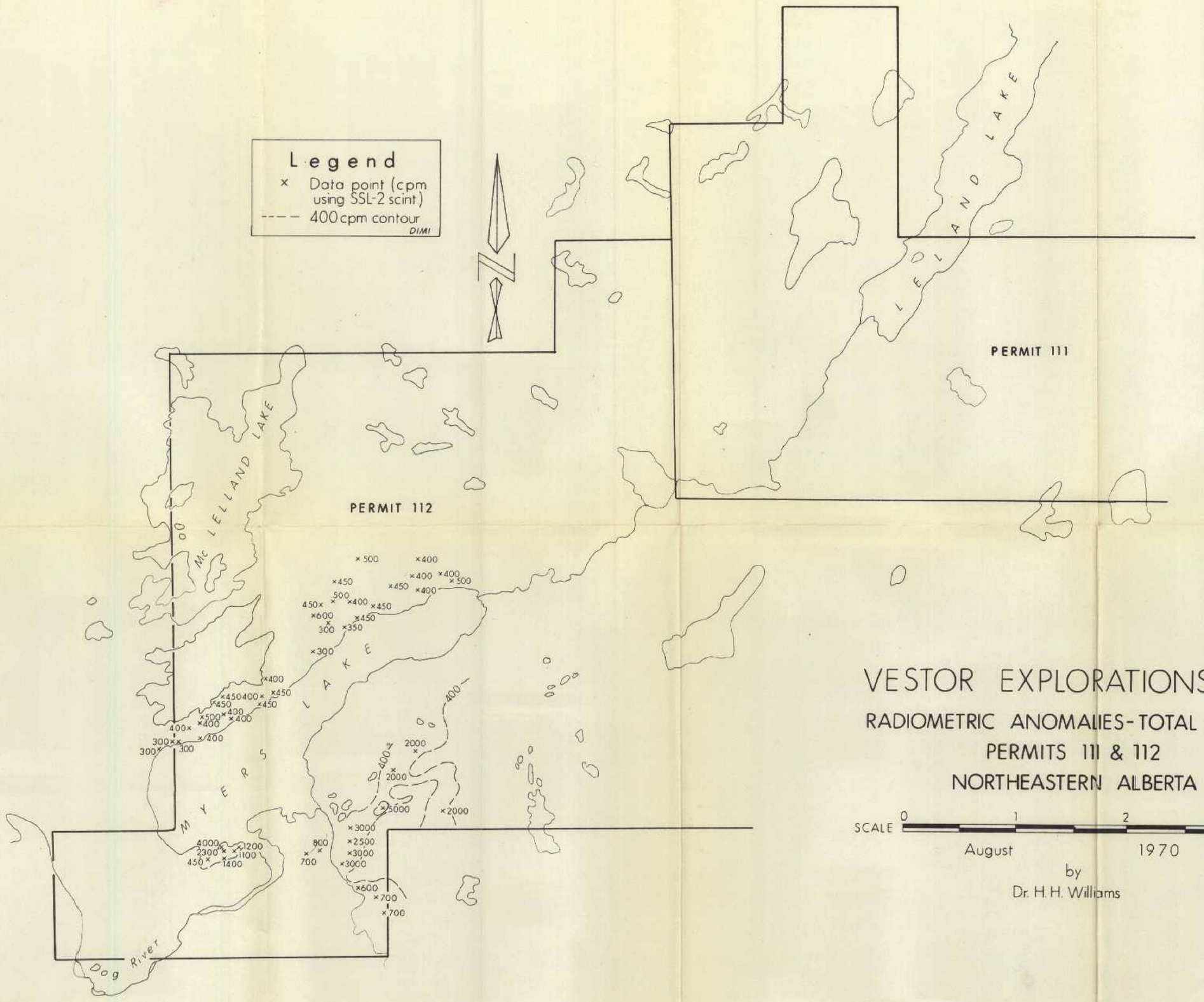

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RADIOMETRIC ANOMALIES - TOTAL COUNT
PERMITS 111 & 112
NORTHEASTERN ALBERTA

SCALE 0 1 2 3 MILES

August 1970

by
Dr. H. H. Williams

Map 3
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Legend

× Data point (cpm on T_2 using TV-5 scint.)

---400 cpm contour

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RADIOMETRIC ANOMALIES

PERMIT 112.

NORTHEASTERN ALBERTA

SCALE 0 1 2 3 MILES

August 1970

by

Dr. H.H. Williams

Map 4

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