MAR 19770019: WHALEBACK LAKE

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REPORT ON THE

1976

INVESTIGATION

OF

PERMIT #248

WHALEBACK LAKE AREA

ALBERTA

(REVISED VERSION)

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INTRODUCTION

During the summer field season of 1976, portions of Alberta Government Permit #248 were examined for possible uranium mineralization by a two man field crew. The area is part of the Western Canadian Shield and is covered by published Research Council of Alberta maps of scale 2" = 1 mile.

LOCATION AND ACCESS

Whaleback Lake is located 432 miles NNE of Edmonton, Alberta and 56 miles east of Fort Smith. The permit area is intersected by latitude 59^{o} 41' and longitude 100^{0}18'. The physiography is typical of the Canadian Shield and is characterized by low relief with elevations ranging between 1000 and 1250 feet above sea level.

Access is by scheduled air service to Fort Smith and by float and ski aircraft to Whaleback Lake.

GEOLOGY

The permit area is underlain by metamorphic and igneous rocks of Precambrian age. Age determinations in northeastern Alberta have yielded dates ranging from 1.7 to 2.3 billion years (Godfrey and Baadsgaard, 1962; Baadsgaard et al., 1964).

The dominant feature of the area is the prevailing northerly trend and steep attitude of all major geological features.

The large infold of quartzite and schist on the east shore of Whaleback Lake is considered a very good target for several reasons. The belt lies within an area of detailed mapping and measures approximately 3½ x ½ miles in extent. The detailed geology is described in Godfrey's R.C.A. preliminary report 65-6. The north end of the quartzite - schist zone has been mylonitized and it is within this deformed area that most radiometric anomalies were found.

GEOLOGY Continued

At the south end of Whaleback Lake a unit mapped as Microsyenite is well exposed. Although not mapped by Godfrey, this unit also occurs in small patches along the east shore of Whaleback Lake and it was found that this rock type portrayed higher gross cound backgrounds (2-3 times). These units as well as the quartzite-schist belt are the important targets for uranium exploration in this area.

RADIOMETRIC SURVEY

The radiometric survey consisted of ground radiometric sampling of the area immediately east of Whaleback Lake on a grid of 500' line spacing and 100' sample spacing.

Instrumentation consisted of a SPP2 scintillometer and an Exploranium Disa 300 gamma ray spectrometer. Systematic sampling giving total radiation, K, U, Th radiation was done with the spectrometer. Results are shown in Table 1 and 2.

Rock sampling was sporadic and only areas of high radioactivity were samples. These areas are shown on Table 3 and the locations are noted on the accompanying overlays.

Results of assays from these sampled areas are shown in Appendix A. These results range from .001 to .645 U_3O_8.

CONCLUSIONS

Work on the Alberta Government permit #248 during the 1976 season has disclosed previously unknown uranium occurrences.

CONCLUSIONS Continued

It is tentatively suggested that the quartzite-schist belt may be the host for uranium mineralization. Beneficiation of uranium is best in this rock type because two mechanisms may have been important in concentration of uranium: Firstly by original sedimentary processes and secondly by remobilization within this unit during metamorphism.

The microsyenite is also important in that it may contain low uranium concentrations but in great volumes.

RECOMMENDATIONS

1. Cut and chain lines at 200 foot intervals to use as a control in carrying out geological mapping and scintillometer surveying.
2. Cut and chain lines at 50' intervals with sample every 20' over highly anomalous area.
3. Strip and trench highly anomalous areas for chip samples.
4. Strip and sample with percussion drill in other areas.
5. Carry out further reconnaissance in other areas.

ESTIMATED COST OF PROGRAM (3 weeks)

1.	Salaries	
	2 Sr. geologists	$ 2,500.00
	2 Jr. geologists	$ 1,500.00
2.	Transportation and supply	$ 2,500.00
3.	Food and Camp	$ 1,000.00
4.	Equipment Rentals	$ 500.00
5.	Poinzar Drill.	$ 1,000.00
6.	Powder, bits, etc.	$ 1,000.00
7.	Administration, telephone, etc.	$ 500.00
	Total :	$10,500.00

REFERENCES

Baadsgaard, H., Cumming, G.L., Folinsbee, R.E. and Godfrey, J.D. (1964): Limitations of Radiometric Dating; Roy. Soc. Can. Spec. Publ. No. 8, p.22-38

Godfrey, J.D. and Baadsgaard, H. (1962): Structural Pattern of the Precambrian Shield in Northeastern Alberta and mica age dates from Andrew Lake district; Roy. Soc. Can. Spec. Publ. IV, p.30-39.

Godfrey, J.D. (1966): Geology of the Bayonet, Ashton, Potts and Charles Lakes District, Alberta; R.C.A. preliminary report 65-6.

TABLE #1

LINE NUMBER

Sample Number	1N	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
000'	NT	55	42	103	99	176	98	194	NT	182	NT	216	140	289	155	352	477
100'	NT	47	106	65	103	70	174	230	NT	164	NT	144	138	144	170	144	109
200'	NT	116	81	92	103	113	154	189	219	287	NT	252	91	236	255	101	129
300'	NT	142	74	175	222	164	95	195	177	156	NT	184	190	182	204	175	110
400'	NT	168	118	144	99	122	80	242	187	145	116	255	107	162	228	NT	189
500'	NT	157	124	91	93	96	129	254	208	150	102	56	183	196	189	104	134
600'	143	107	126	166	151	172	137	299	184	240	61	169	262	137	229	139	143
700'	87	166	193	190	149	124	101	233	195	148	69	182	122	209	242	32	125
800'	100	158	243	75	97	175	160	139	124	207	78	130	173	224	164	34	31
900'	87	141	228	170	134	160	111	184	163	302	101	102	186	189	381	33	30
1000'	162	215	162	175	174	127	149	230	133	220	122	187	135	264	399	179	34
1100'	142	188	137	180	154	144	165	187	199	134	241	63	225	276	208	43	76
1200'	103	152	106	130	127	137	100	182	197	146	260	142	122	219	238	197	132
1300'	58	69	211	199	159	183	151	151	252	206	127	164	57	174	283	34	107
1400'	120	229	141	197	181	166	122	158	269	173	153	324	118	164	228	55	114
1500'	241	184	141	180	130	82	178	262	293	263	173	145	90	178	237	100	129
1600'	291	101	187	131	157	119	154	217	141	218	453	244	169	226	198	NT	NT
1700'	180	200	120	55	185	82	169	254	229	111	188	178	104	49	214	NT	NT

TABLE #2

Sample Number	LINE NUMBER 1N	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
1800'	107	1300	206	146	145	147	107	125	304	79	230	106	121	55	182	NT	NT
1900'	151	223	179	193	147	101	211	210	283	93	166	119	140	127	192	NT	NT
2000'	169	286	173	149	179	123	131	231	278	133	72	111	184	76	215	NT	NT
2100'	101	221	205	197	142	154	167	255	180	118	112	101	65	100	183	NT	NT
2200'	124	117	180	61	141	44	122	110	167	221	192	96	99	172	97	NT	NT
2300'	187	187	123	65	163	43	184	154	183	204	213	104	84	63	164	NT	NT
2400'	1044	81	124	2063	141	83	78	333	254	122	167	90	107	208	147	NT	NT
2500'	174	134	125	206	108	185	177	299	212	217	196	102	127	163	92	NT	NT
2600'	121	293	184	187	168	168	247	317	247	117	237	99	149	153	142	NT	NT
2700'	87	191	134	216	190	201	310	323	147	193	130	148	124	166	213	NT	NT
2800'	267	192	114	254	197	196	139	335	147	189	130	123	117	184	197	NT	NT
2900'	NT	NT	99	273	129	180	236	179	253	115	181	98	130	134	114	NT	NT
3000'	NT	NT	109	134	189	196	159	443	350	231	129	179	103	179	170	NT	NT

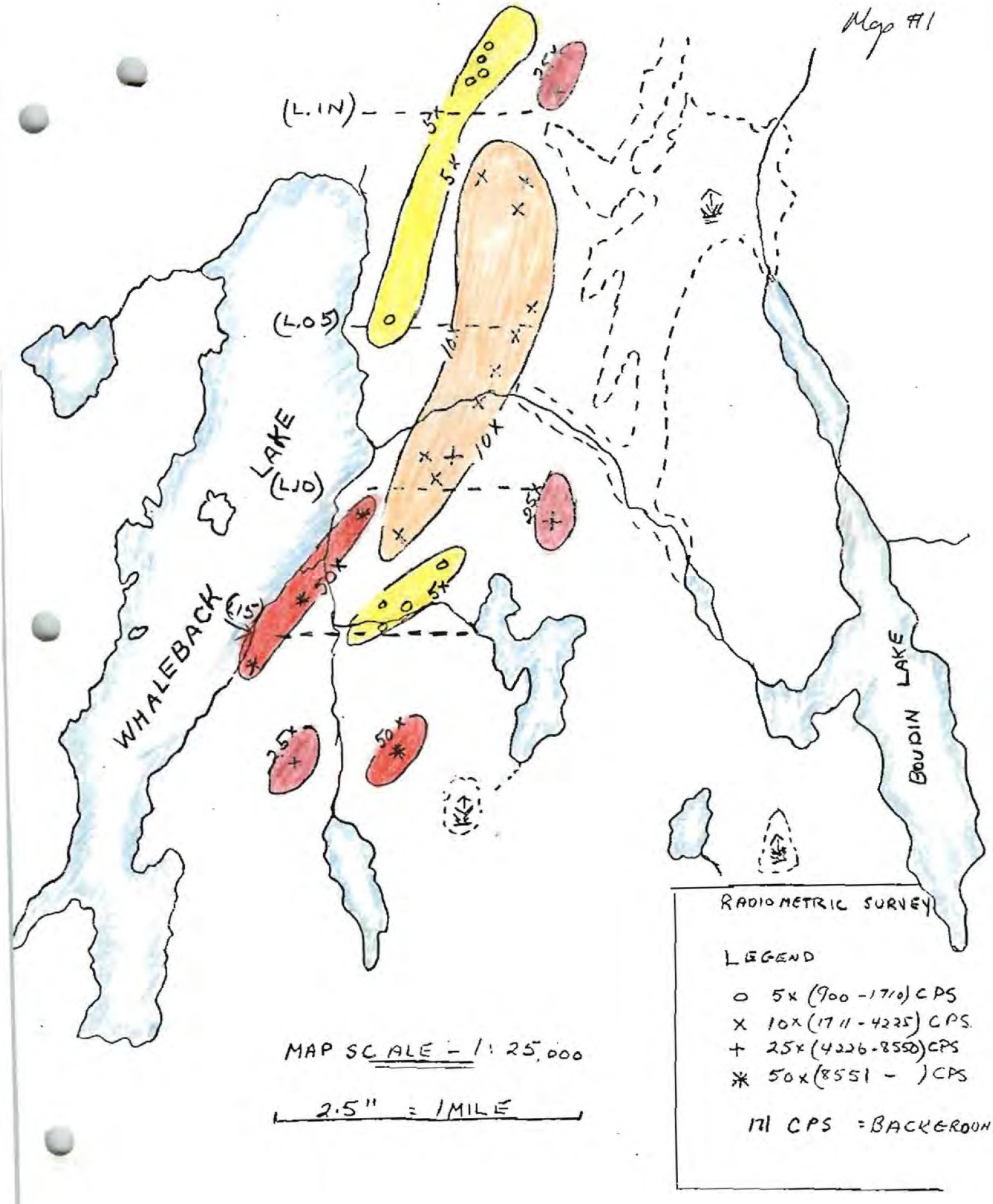
NT - sample not taken

Numerical values - total counts per second

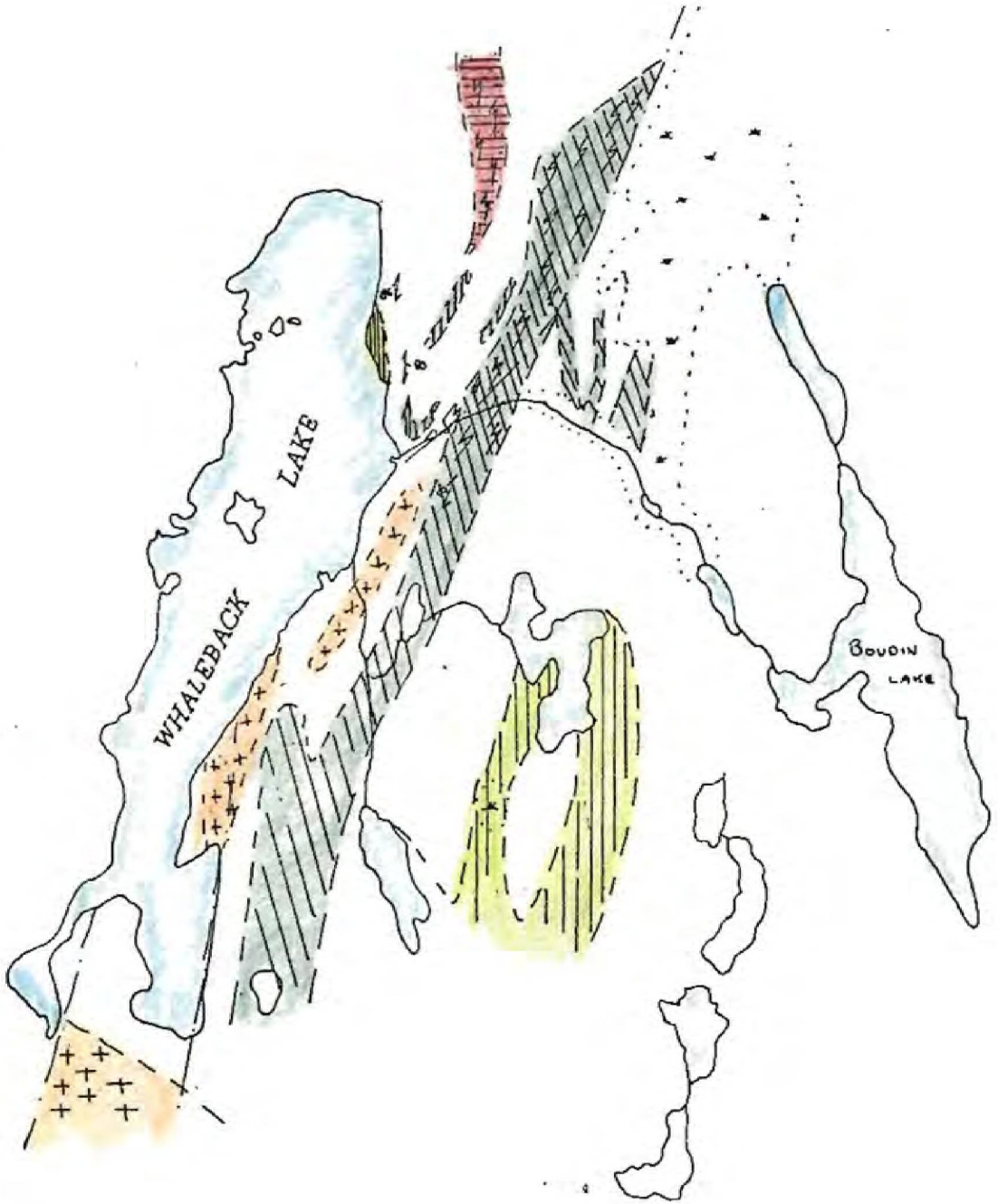
TABLE #3

Sample Number		Counts per Second			
		Total	K	U	Th
7		3767	137	102	28
8		2063	74	58	11
11		961	37	26	10
12		1736	61	54	9
13		3405	*	*	*
14		2305	111	57	16
15		5149	144	82	5
16		3329	*	*	*
17		2023	*	*	*
20		1798	64	38	14
23		10981	*	*	*
24		14053	*	*	*
26		1300	*	*	*
27		1305	*	*	*
28		1203	*	*	*
29		5172	126	60	3
31		1807	*	*	*
32		1497	*	*	*
33		1215	*	*	*
35	(area 3'x30' over 5000 cps)	6505	222	168	39
		8250	377	250	61
		9104	361	249	58
37		5007	167	107	30
38		12603	454	308	62
40		2699	104	79	20
41		10899	523	356	68
Chip		18031	905	691	137

19770019
Map #1



1977 0119
Map #2



GEOLOGY MAP

LEGEND

- MICROGRANITE.
- QUARTZITE - SCHIST.
- BIOTITE - SCHIST.
- BIOTITE - GRANITE - GNEISS
- HORNBLENDE - GRANITE - GNEISS
- ASSUMED CONTACTS
- FAULTS.
- FOLIATION
- SHEARING

AFTER GODFREY, J.D. RCA 65-6 with modifications

3000 FEET

To: PROBE EXPLORATION LTD.,
#2, 215 [redacted] 0th St. N.W.,
Calgary, Alta.

ATTN: Bob Dales

File No. 11465
Date June 1, 1976
Samples Chips

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	% U308
# 7	.005
# 12	.002
# 15	.007
# 16	.002
# 23-24	.013
# 29	.645
# 35	.001
# 37	.078
# 38	.115
# 40	.005
# 41	.003

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

To: PROBE EXPLORATION LTD.,
#2, 21[redacted]10th St. N.W.,
[redacted]Calgary, Alta.

ATTN: Bob Dales

File No. 11425
Date May 27, 1976
Samples Chip

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	% U308
Chip Sample	.025

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia

URANIUM - NORTH EASTERN ALBERTA

1. Uranium Occurrence Reports

   (a) North Eastern Alberta
   (March 1975)

   (b) Whaleback Lake Area
   (March 1975)
   ($59^{o}41N$ $110^{o}18W$).

2. Probe Exploration Ltd. Report
   (1976)
   Whaleback Lake Area.

FOREWORD

Mr. Tom J. Donaghy wrote his report "Possible Uranium Occurrences in North Eastern Alberta" in 1975. In this report, he discussed the geology of that area, and then selected the best target areas for further investigation. From that selection, the one chosen for investigation was the Whaleback Lake Prospect.

Probe Exploration Ltd., an Alberta Company, then applied for, and was granted, "Quartz Mineral Exploration Permit No. 248", more particularly described as follows :

In Township 123 Range 2 West of 4th Meridian
Sections 15-22 (inc) W½ section 27 and
Sections 28-33 (inc)

(and)

In Township 124 Range 3 West of the 4th Meridian
Section 6.
Containing an area of 9920 acres more or less.

The following information is taken from Mr. Donaghy's more detailed report on the area and the selected target which was Whaleback Lake Region.

The Probe Exploration Report on its investigation of Permit No. 248 in 1976 is attached.

REGIONAL GEOLOGY

19770019

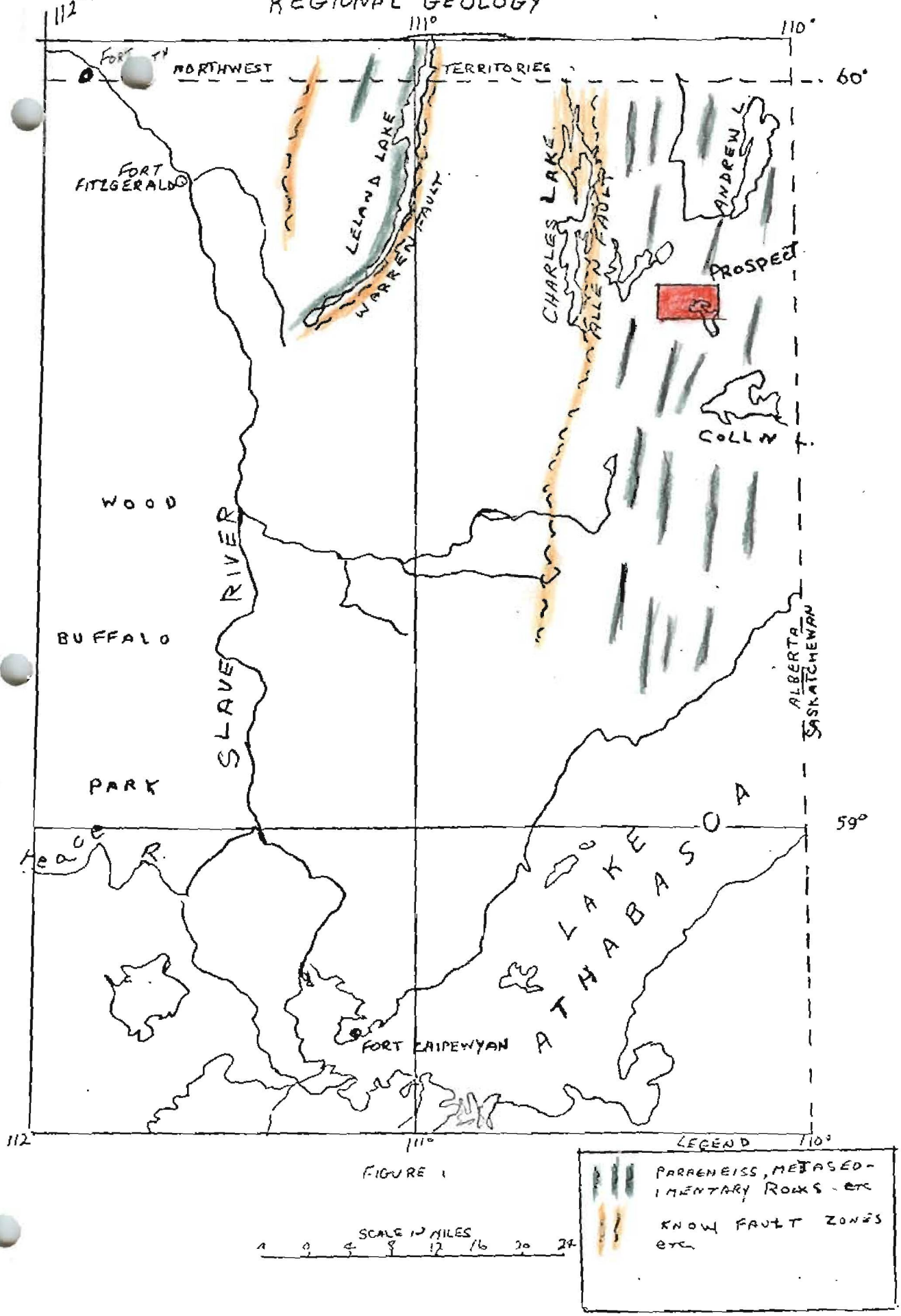
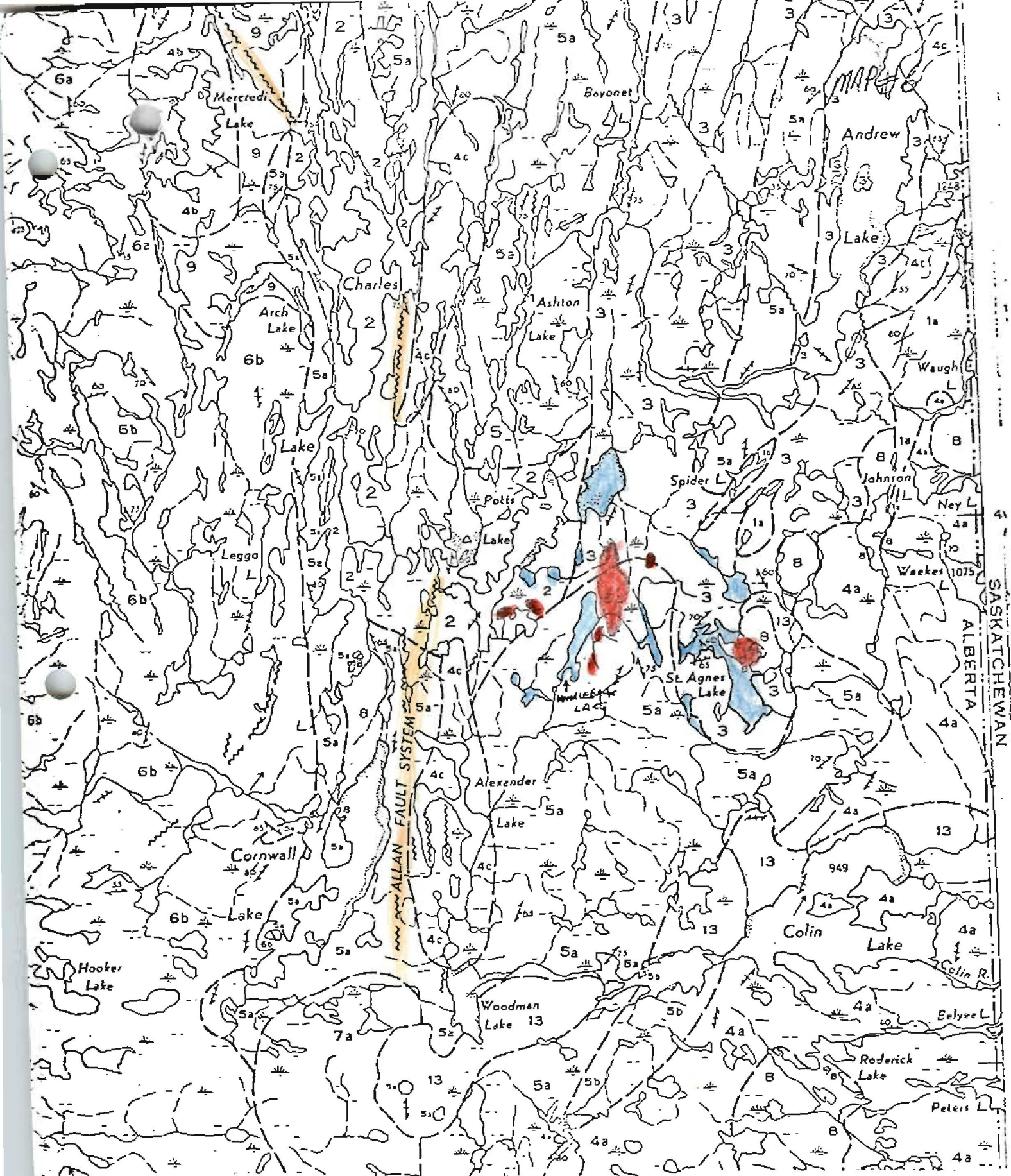


FIGURE 1


MAP #2
Mercredi Lake
Bayonet
Andrew
Lake
Charles
Arch Lake
Ashton Lake
Waugh L
Lake
Spider L
Johnson L
Ney L
Potts Lake
Legga L
Waekes L
SASKATCHEWAN
ALBERTA
ALLAN FAULT SYSTEM
St Agnes Lake
Alexander Lake
Cornwall Lake
Colin Lake
Colin R.
Hooker Lake
Woodman Lake
Belyea L
Roderick Lake
Peters L
Tuttle L
AIRBORNE RADIOMETRIC SURVEY
over 50 counts/sec.
SCALE : one inch = 1 mile
SOURCE - GSC 1960 (Riley)
Fig. 3.
19770019

INTRODUCTION

In North Eastern Alberta, directly west of Uranium City, a suite of metasedimentary rocks enfolded into the polymetamorphic granite gneiss basement is very similar in nature to those described by Koster (1965) and Tremblay (1968) located in Saskatchewan Uranium showings and have been associated with these intercalations Godrey (1958).

Exploration generally has been of a reconnaissance nature only and as a result there is a lack of suitable geological information.

REGIONAL GEOLOGY

The only maps that cover the area are reconnaissance maps (four miles equals one inch) published by the Geological Survey of Canada.

Riley (1960) and a party of non-geologists (per comm. 1974, J.D. Godfrey) has published the only reconnaissance map of the North East corner of Alberta. Most of his units are all-inclusive and often cut across regional strike as determined by later publications of Godfrey et al. Rileys work is then of limited exploration value, but does tie in with J. Tuzo Wilson's 1938 reconnaissance maps to the north to provide a useable regional framework. Generally the area divides itself into three areas, marked by changes in general lithology and separated by fault systems.

East of the Allen Fault system (see Fig.1. and Fig. 3) is a north-south trending area of relatively high crystal level gneisses which contain intercalations of paragneisses, meta-quartzites, parachists and para-amphilobites. These rocks may be similar to those found further east in Saskatchewan. The basement gneisses are often porphryoblastic or migmatitic. Pegmatites sometimes containing Uranium and molybdenum (Godfrey R.C.A. 58-4) cut concordently and

disconcordantly through these gneisses. The metasedimentary bands within this complex align themselves generally with the north-south strike. The entire sequence has been cut by deep faults and mylonite zones. The southern extent of the Allen Fault and this area of rocks has not been established or published by J.D. Godfrey. It is speculated that they may extend downstrike as far south as the south shore of Lake Athabasca.

Between the Allen Fault and the Warren Fault by Leland Lake, lies a perphryoblastic potassium-metasomatic leucocratic gneiss. Specific information on this pluton is privileged as yet; however it may be said that a total lack of metasedimentary intercalations in this area indicated on Rileys Maps as unit 6b, quells further interest with respect to uranium exploration.

West of the Warren Fault, particularly along Leland Lake and Donovan Lake, straddling the 60th parallel, a zone of metasedimentary rocks mapped by Riley 1b and traversed by the writer lies an apparent downthrown demigraben next to the fault, bounded on the west by granular leucocratic granite greiss of uniform composition and gradational contact. Wilson mapped these metasedimentary rocks as "possible Tazin equivalents".

These three areas with their vague southern limits, compose the Northeast corner of Alberta.

Chances for beneficiation of Uranium is best in the rocks in the areas of metasedimentary intercalations because there are two mechanisms that are able to concentrate the mineral: firstly by sedimentogenic processes and secondly by remobilization within the unit during metamorphism. This is why metasedimentary units were chosen as target areas for this study. (Some radiometric anomalies are likely due to Uranium - thorium occurrences).

The ages of these rocks was determined by Baadsgaard and Godfrey (1962). Dates received ranged from Archean to Hudsonian, indicating that the sandstones and shales now metamorphosed and intercalated, were deposited upon pre-existing sialic crust, and were not likely to be geosynclinal or off-craton. This is a favorable environment for uranium occurrences. Using the above criteria it would appear that many targets exist in the area published by J.D. Godfrey and the Research Council of Alberta.

NUMBER ONE PROSPECT - Whaleback Lake Area.

The large infold of quartzite and schist on the east shore of Whaleback Lake is considered a good area for several reasons.

The belt lies within an area of detailed mapping. It measures about 3½ miles x ½ mile in extent and therefore is large enough to assure its presence (i.e. it is not an air photo interpretation).

The detailed geology is described in the Godfrey R.C.A. Preliminary Report 65-6. Extract #10 gives his description of the metasedimentary belt. The north end of the quartzite-schist zone has been myloritized. It is this deformed area which gives a radiometric anomaly (see Fig. 3) over the unit. Several other anomalies occur in the general area near Potts Lake and St. Agnes Lake. There is a possibility that some of the smaller anomalies may be associated with pegmatites.

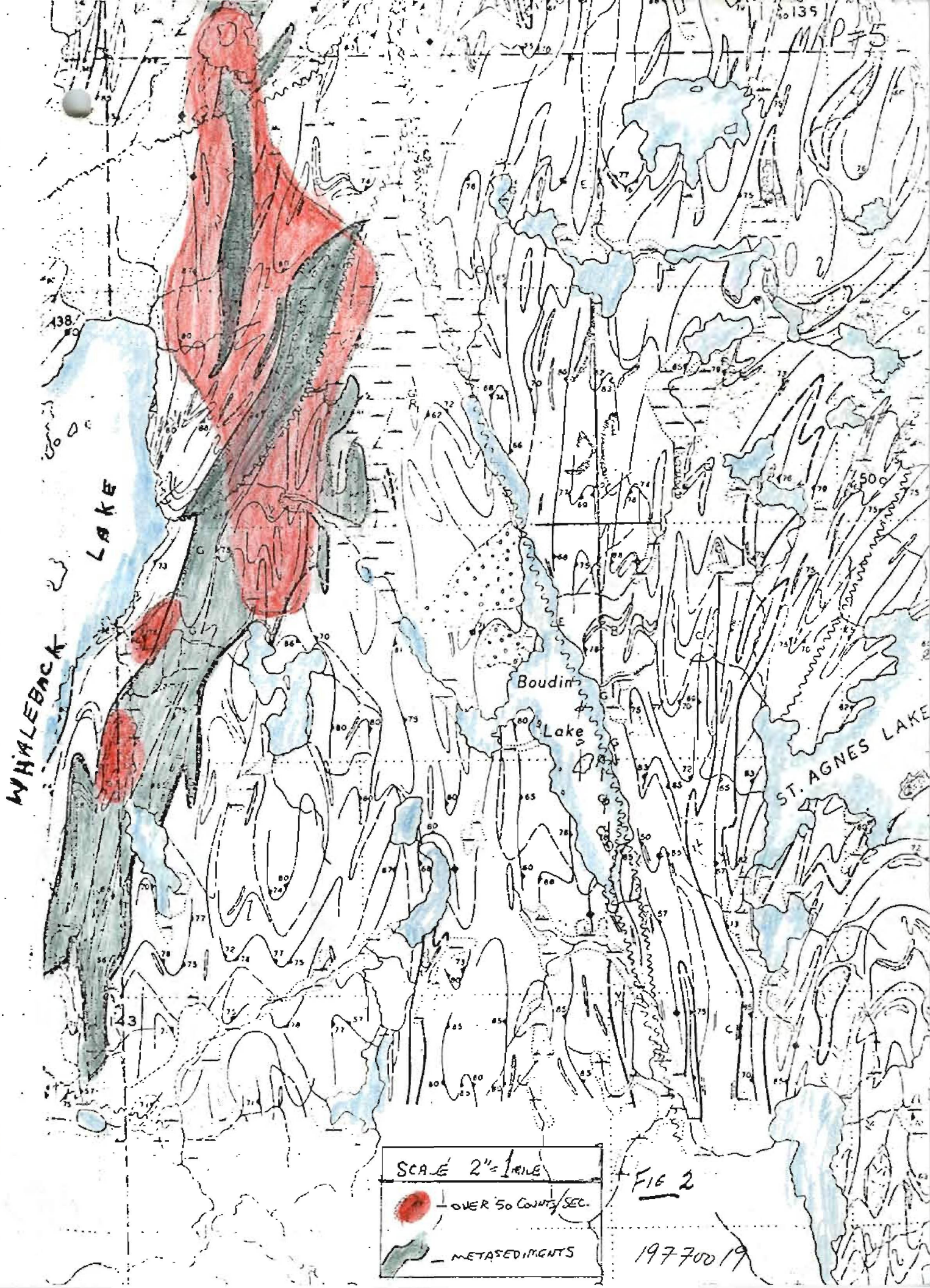


FIG 2

19770019

EXTRACT #1. R.C.A. Publication 65-6 (J.D. Godfrey).

Quartzite

The metasedimentary rocks are divided into two map-units, quartzite and biotite schist. Both units represent a mixture of rock-types, the predominant lithologic character being indicated by each unit. Lithologic graduations both between and within these two map-units may either parallel or cross the s-rike of the foliation and schistosity.

The pure to impure quartzites are white, grey, pink, green or blue where fresh, with color banding showing in the thicker beds. Weathered surfaces tend to be lighter in color and may have an orange-brown iron stain. Rocks containing garnet produce a pitted surface on weathering, and smooth to uneven fracture surfaces mostly parallel the rock foliation.

The common, typically impure quartzite contains from 60 to 80 per cent combined quartz and feldspar, from 15 to 35 percent combined biotite, muscovite and chlorite, and may have minor amounts of garnet, amphibole, epidote, sillimanite and cordierite. The quartzites are fine to medium grained, sugary textured.

Other rock-types present in the quartzite map-unit include minor amounts of biotite and hornblende schists, amphibolite and some granitic material. Small amounts of sericite schist and phyllonite characterize sheared areas.

Biotite Schist

Biotite schist is dark grey-brown on fresh surfaces with lighter bands and patches of feldspar and quartz. Many weathered outcrop

surfaces are coated by an orange-brown iron-oxide stain. As little as 25 percent micaceous material imparts a distinctive schistose appearance to these rocks. Small concentrations of garnet, graphite and pyrite are locally present. Mineralogic banding on a small scale is particularly exemplified by the layering of quartzo-feldspatchic constituents.

The chief rock-type included in the biotite schist map-unit is impure quartzite, with smaller amounts of sericite schist, chlorite schist, phyllonite and amphibolite.

REPORT ON THE
1977
INVESTIGATION
OF
PERMIT # 248
WHALEBACK LAKE AREA
ALBERTA
PROBE EXPLORATION CO. LTD.

INTRODUCTION

During the summer of 1977, Alberta Government Permit #248 was examined for possible uranium mineralization by a three man field crew. This program was a follow-up of the previous summer's work and was intended to re-examine the reported uranium occurrences found in 1976.

Location, access and geology has been discussed in the 1976 report. A radiometric survey was conducted on the old survey grid and areas of priority were examined in detail. A G.S.C. pack-sack diamond drill was used to sample areas of anomalous radioactivity.

CONCLUSIONS

The radiometric survey failed to reproduce the results found in the 1976 investigation. The reported anomalies could only be detected at the rock face and were confined to hairline fractures over distances of only a few feet.

The remaining radioactive areas were stripped of moss cover and found to be associated with small and irregular pegmatites. These pegmatites were sampled with a portable G.S.C. drill and found to contain very small concentrations of uranium when assayed. The strong radioactivity was due to thorium minerals.

RECOMMENDATIONS

Radioactivity found in this permit area is confined to thorium bearing pegmatites and hairline fractures which are very small and irregular in nature. These anomalies are not economically significant and it is recommended that no further work be conducted within this permit area.

To: PROBE EXPLORATION LTD.,
#2, [redacted]5A-10th St. N.W.,
CALGARY, Alta.

ATTN: B. Dales

File No. 13346
Date June 8, 1977
Samples Core

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	CHEMICAL PPM U308
HOLE # 1	
0'-12'	121.0
12'-24'	163.0
HOLE # 2	
0'-12'	112.0
HOLE # 3	
0'-12'	12.8
12'-24'	4.9
HOLE # 4	
0'-12'	16.4

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

[redacted]

Licensed Assayer of British Columbia