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GEOCHEMICAL AND PROSPECTING REPORT
ON THE
PATO 1 - 4 MINERAL CLAIMS
CRACKER CREEK, B. C.
ATLIN MINING DIVISION

LAT. 59°43' North; LONG. 133°20' West
N.T.S. Map-Sheet 104N/11W

for

Union Oil Company of Canada Limited

by

R.J. Bilquist and
R.R. Culbert, PhD., P.Eng.

D.G. Leighton & Associates Ltd.
Vancouver, B.C.

30 September, 1977

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

NO. _____

CONTENTS

| | Page |
|---|----------------|
| INTRODUCTION | 1 |
| SUMMARY AND CONCLUSIONS | 2 |
| GENERAL DESCRIPTIONS | 3 |
| Location and Access | 3 |
| Claims | 3 |
| GEOLOGY AND BACKGROUND | 3 |
| PROSPECTING | 5 |
| GEOCHEMICAL SURVEY | 6 |
| BREAKDOWN OF COSTS | 7 |
| CERTIFICATION | 8 |
| MAPS | |
| Index Map | follows Page 3 |
| PATO Property - Uranium in Soils, Purple Rose Area | follows Page 7 |
| PATO Property - Prospector's Sketch | in pocket |
| APPENDIX "A" | |
| Analytical Procedure | |

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GEOCHEMICAL AND PROSPECTING REPORT
ON THE
PATO 1 - 4 MINERAL CLAIMS
CRACKER CREEK, B. C.
ATLIN MINING DIVISION

INTRODUCTION

This report describes the results of some geochemical and prospecting work completed over parts of the PATO 1 - 5 mineral claims. This work was done at intervals during the Fall of 1976 and Summer of 1977 as part of a larger program of uranium exploration covering the Surprise Lake batholith and surrounding area.

The conclusions set forth in this report are based on prospecting and geochemical work done on the property. The prospecting included ground based radiometric measurements.

SUMMARY AND CONCLUSIONS

1. The PATO property consists of four unsurveyed mining claims registered in the name of Union Oil Company of Canada Limited.
2. The property, which is located approximately 25 km. northeast of Atlin, British Columbia, is accessible by dirt road.
3. The claims are located at the western edge of the Surprise Lake batholith where it contacts Cache Creek age sedimentary and volcanic units and ultramafic intrusions.
4. Work done on the property has consisted of prospecting and geochemical surveys for uranium.
5. Mineralization found to date consists of shear zone controlled secondary minerals (zeunerite) on an extension of the Purple Rose occurrence discovered in 1952.
6. Geochemical response to uranium of this type in both in place soils over mineralization or in stream sediments in the general area is generally poor.

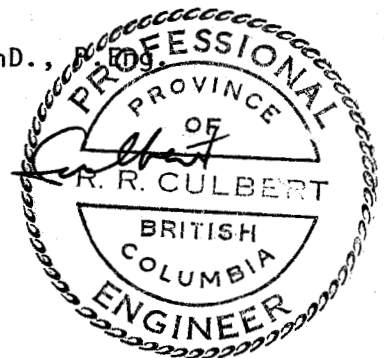
Respectfully submitted,

Ron Bilquist

R.J. Bilquist

R.R. Culbert, Ph.D.,

Rick Culbert



30 September, 1977

GENERAL DESCRIPTIONSLocation and Access

The PATO property is located in the extreme northwestern portion of British Columbia, 25 kilometers northeast of Atlin. More specifically, the property is located at the headwaters of Cracker Creek at an average elevation of about 5500 feet above sea level. The geodetic coordinates are 159°43' N, 133°20' W.

The property is accessible from Atlin by 25 km. of dirt road, 20 km. of which to Surprise Lake is graded and in good condition. The remaining 5 km. (Adanac camp road) are in poor condition and require a 4-wheel drive vehicle.

The topography of the area consists of subrounded mountains cut by broad drainage patterns. The PATO property lies mainly above timber line in an area of limited rock exposures.

Claims

The PATO property consists of the following claims registered in the name of Union Oil Company of Canada Limited:

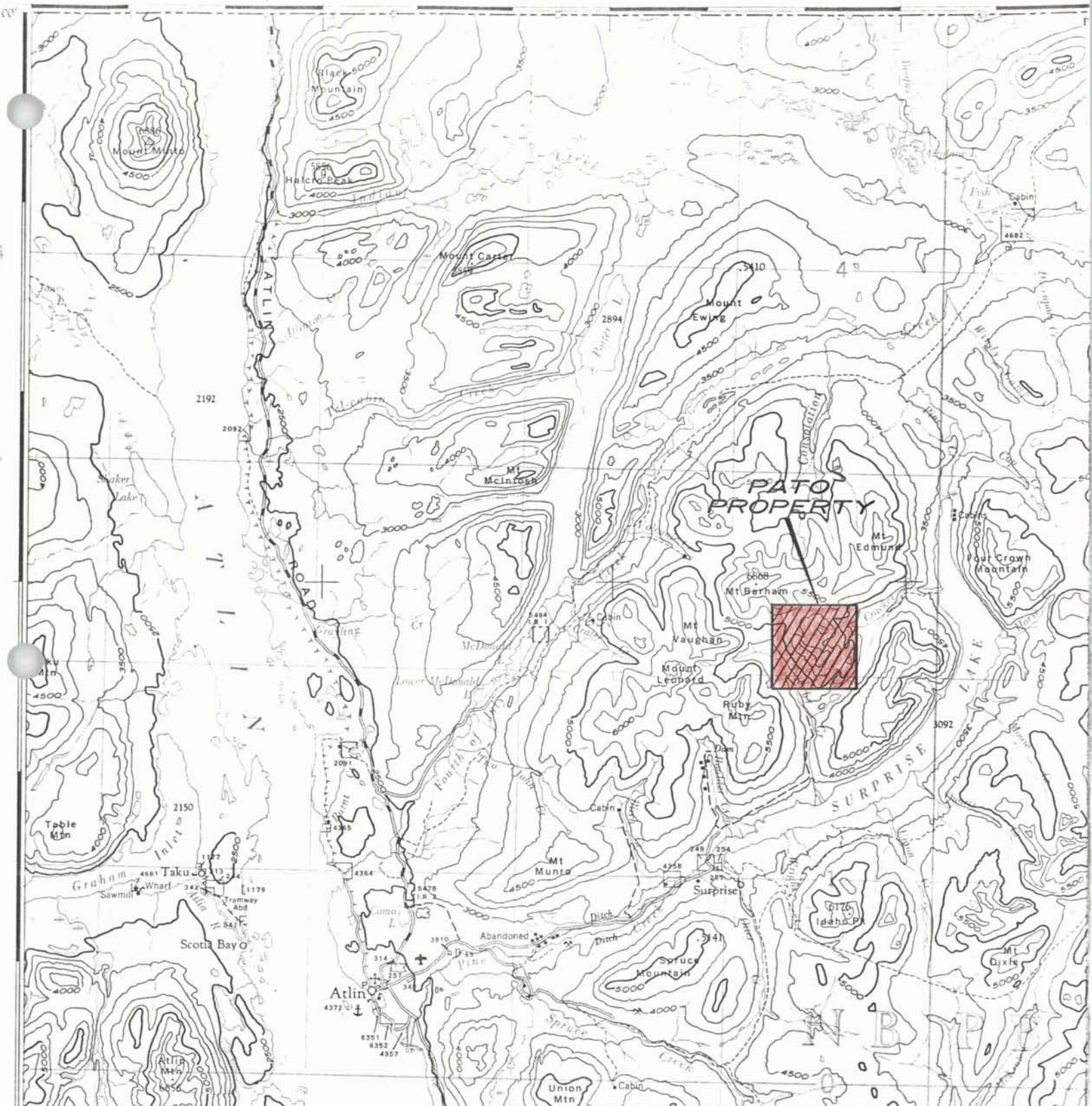
| <u>Mineral Claims</u> | <u>Units</u> | <u>Record No.</u> | <u>Record Date</u> | <u>Expiry Date</u> |
|-----------------------|--------------|-------------------|--------------------|--------------------|
| PATO 1 | 9 | 131 (9) | Sept. 17, 1976 | Sept. 17, 1977 |
| PATO 2 | 18 | 132 (9) | Sept. 17, 1976 | Sept. 17, 1977 |
| PATO 3 | 8 | 156 | Oct. 8, 1976 | Oct. 8, 1977 |
| PATO 4 | 1 | 157 | Oct. 8, 1976 | Oct. 8, 1977 |

GEOLOGY AND BACKGROUND

The PATO property is located at the western edge of the Surprise Lake batholith, a large alaskite-quartz-monzonite intrusion of Upper Cretaceous or possibly Tertiary age. These "granites" intrude Cache Creek age sedimentary and volcanic rocks as well as the so-called Atlin Intrusions on the west side of the PATO claims. The Atlin Intrusions consist of basic rocks enclosed in ultramafic masses.¹

The Cracker Creek-Ruby Creek area has a history of mining exploration going back to the turn of the century. Initial interest was in placer gold. In the 1940's and 1950's this area was intensively prospected for tungsten. At

¹ J.D. Aitken (1959), Atlin Map-Area, British Columbia: G.S.C. Mem. 307, pp. 37 - 39.



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PATO PROPERTY INDEX MAP

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| | | | |
|-------------------|---------------------|---------------------|--------------------|
| PROJECT M.U.G. | PROJECT NO. 101A | SCALE 1: 250,000 | DATE AUG - 1977 |
|-------------------|---------------------|---------------------|--------------------|

this time the Purple Rose and Fisher uranium occurrences were discovered. These are similar in general character to recent (1976 - 1977) uranium discoveries by R.J. Bilquist in other parts of the Surprise Lake batholith (i.e. Snowbird occurrence at Zenazie Creek and Dixie occurrence at Union Creek). The most recent activity of consequence has been the development of the Adanac molybdenum prospect on Ruby Creek.

The Purple Rose showing bears considerable similarity to the Dixie, both in its setting and mineralogy, although the uraniferous alteration of granite has not been encountered at the former. Like the Dixie, Purple Rose involves a roof or sloped margin of the alaskite exposed in the headwall of a steep cirque. The roof rocks here are complex, involving cherts, metavolcanic rocks, dioritized greenstone, marble and basic intrusions. The contact appears to be a broad shear and fracture zone lacking in directional character. Although badly leached, a reconnaissance prospecting traverse of this headwall showed copper and uranium mineralization associated with small erratic fractures and veins.

The Purple Rose is described as follows in the Minister of Mines Report for 1955 (pg. 7, 8):

"The Purple Rose and Fisher groups were located in July and August of 1954 to cover uranium showings discovered by Ole Olsen and Norman Fisher, of Atlin, while prospecting for K.J. Springer of Toronto. The claims lie between elevations of 5,000 and 6,000 feet. The Purple Rose is at the head of Cracker Creek and the Fisher is between the heads of Boulder and Ruby Creeks; all creeks flow into Surprise Lake, east of Atlin.

During the summer of 1955 Barymin Company Limited, with Charles J. Brown in charge, did surface stripping on showings on both groups. A tent camp was established at the head of the west branch of Cracker Creek, about 4 miles by trail from the head of the road on Ruby Creek; a second tent camp, used while working on the Fisher group, was near the head of Ruby Creek, about 4½ miles by trail from the head of the Ruby Creek road, which is 22 miles from Atlin.

The Purple Rose claims are, for the most part, underlain by rusty-weathering granite or alaskite characterized by a very small percentage of dark minerals and a high percentage of smoky quartz. This rock, at the very head of the west branch of Cracker Creek, intrudes quartzite, greenstone, and limestone of the Cache Creek group. At one place on the contact, at an elevation of 6,000 feet, the limestone is metamorphosed to a tremolite-garnet skarn containing a few small lenses of magnetite and showing copper stain along minor fractures.

The uranium showings lie within the intrusion between elevations of 5,500 and 6,000 feet on the steep headwall of the cirque at the head of the west branch of Cracker Creek.

"The secondary uranium minerals zeunerite (copper uranium arsenate) and metazeunerite (hydrous copper uranium arsenate) were identified in August, 1954, by E.W. Nuffield, of the University of Toronto, in material from the Purple Rose showings. This is the first record of zeunerite in British Columbia.

One showing at an elevation of about 6,000 feet was discovered by the presence of zeunerite in float in thick granite talus on the steep south side of the cirque. A considerable amount of work was done in the talus, attempting to reach bedrock through the permanently frozen material that lies just below the surface. Bedrock was reached in only one trench about 12 feet long. The trench exposes strongly kaolinized granite cut by a shear striking about north 10 degrees east and dipping 55 degrees west. The kaolinization appears to spread outward from the shear and extends across the full width of the trench. The strongly kaolinized granite in and near the shear in some places has a pale apple-green stain or incrustation which has been identified as zeunerite and metazeunerite. Examination with a Geiger counter indicates that the highest counts are obtained on the footwall side of the shear. A selected sample of kaolinized granite containing zeunerite assayed: Uranium oxide, 0.088 per cent; thorium oxide, 0.011 per cent. Company assays from the same cut showed small amounts of silver and some lead and copper.

This showing could not be traced along strike because of the depth of permanently frozen talus.

A second showing lies about 1,600 feet to the west at about 5,500 feet elevation, on the southwest headwall of the cirque. There a shear 1 to 2 feet wide striking west and almost vertical cuts a grey porphyritic phase of the intrusion. In places the shear is occupied by a few inches of vuggy quartz which is erratically mineralized with arsenopyrite, tetrahedrite, and some pyrite. Examination with a Geiger counter showed only a slight increase over background count. A selected sample well mineralized with arsenopyrite assayed: Uranium oxide equivalent, 0.003 per cent; copper, 1.06 per cent."

PROSPECTING

The prospecting procedure followed on the PATO property consisted of traversing with a scintillometer and rock hammer. The instrument used was a French-made Saphymo-Stel, model SPP2-NF. Radioactive counts quoted in this report (counts per second) were obtained using this instrument.

In 1976 the Purple Rose shear was followed south along the west cirque face to the showing. Mineralization seen along the shear included arsenopyrite, zeunerite and minor galena.

Silt samples from the north tributary of Cracker Creek revealed moderate uranium values, as did several spring samples on the south side of the valley. One traverse through this area in 1976 revealed radioactive float which assayed 0.103% U_3O_8 . No further work was done due to snow. In 1977 follow-up identified the float source, a showing located near the top of the slope (see sketch map in pocket). The mineralization is shear controlled in a zone which strikes down and across this same slope approximately northwest by west. Outcrop here consists mainly of medium grained alaskite with secondary zones of "glassy" porphyritic aplite. The aplite gives counts of 600 cps compared to 1000 cps recorded at the showing. One rock assayed 0.197% Cu, 3.6% As, 0.106% U_3O_8 ; another from farther along the shear assayed 0.112% U_3O_8 . The extent of mineralization is impossible to determine through prospecting, due to the considerable overburden present.

A traverse was made from north of the small lake at the head of Cracker Creek along the east side of PATO-2 claim. A silt sample collected from a spring at the trail (which runs between the lake and a hanging valley to the north) ran 53.0 ppm uranium. This spring drains east from the west side of the hanging valley and lies within the claim block but near the south line defining PATO-2.

A large number of quartz boulders are located at the south end of the hanging valley which may be an indication that the valley coincides with a fault. In this case curvature of the creeks at either end indicates an easterly dip.

Along the ridge east of the hanging valley the rock is predominantly medium to coarse grained alaskite with background counts of 300 cps. This changes to porphyritic alaskite toward the ridges with background radioactivity dropping to 200 cps. Immediately before the change in rock type there is a small east-facing ravine. One rock from the ravine area assayed 1.51 oz./ton Ag, 1.62% Pb and 1.04% Zn. From surface exposures this does not seem to be a significant occurrence; however, overburden makes interpretation difficult.

In conclusion, a new uranium occurrence discovered on the PATO property appears to be on an extension of a shear zone which contains the Purple Rose occurrence. This shear should be traceable by geophysical instruments. Also, more prospecting work is warranted.

Results of prospecting work on the PATO property are shown on a map entitled "PATO Property - Prospector's Sketch" (in pocket).

GEOCHEMICAL SURVEY

The Purple Rose uranium showing occurs on a cirque rim. It disappears below block talus on one side of this rim, and below moderate overburden and felsenmere on the other. A small grid of soil samples was taken on

the overburden side to test the geochemical expression of this type of mineralization, and to see if any anomalous zones were present.

There was a reasonable range of results in the uranium analyses, from 0.5 to 63 ppm. Although even the highest of these is not particularly anomalous for soils in this general region, the range is sufficient to trace known mineralization clearly. Furthermore, the high results do form a crude system of zones. At least some of these "zones", however, may mark the passage of waters through the soil, and there is some tendency for the more organic samples to have higher uranium content.

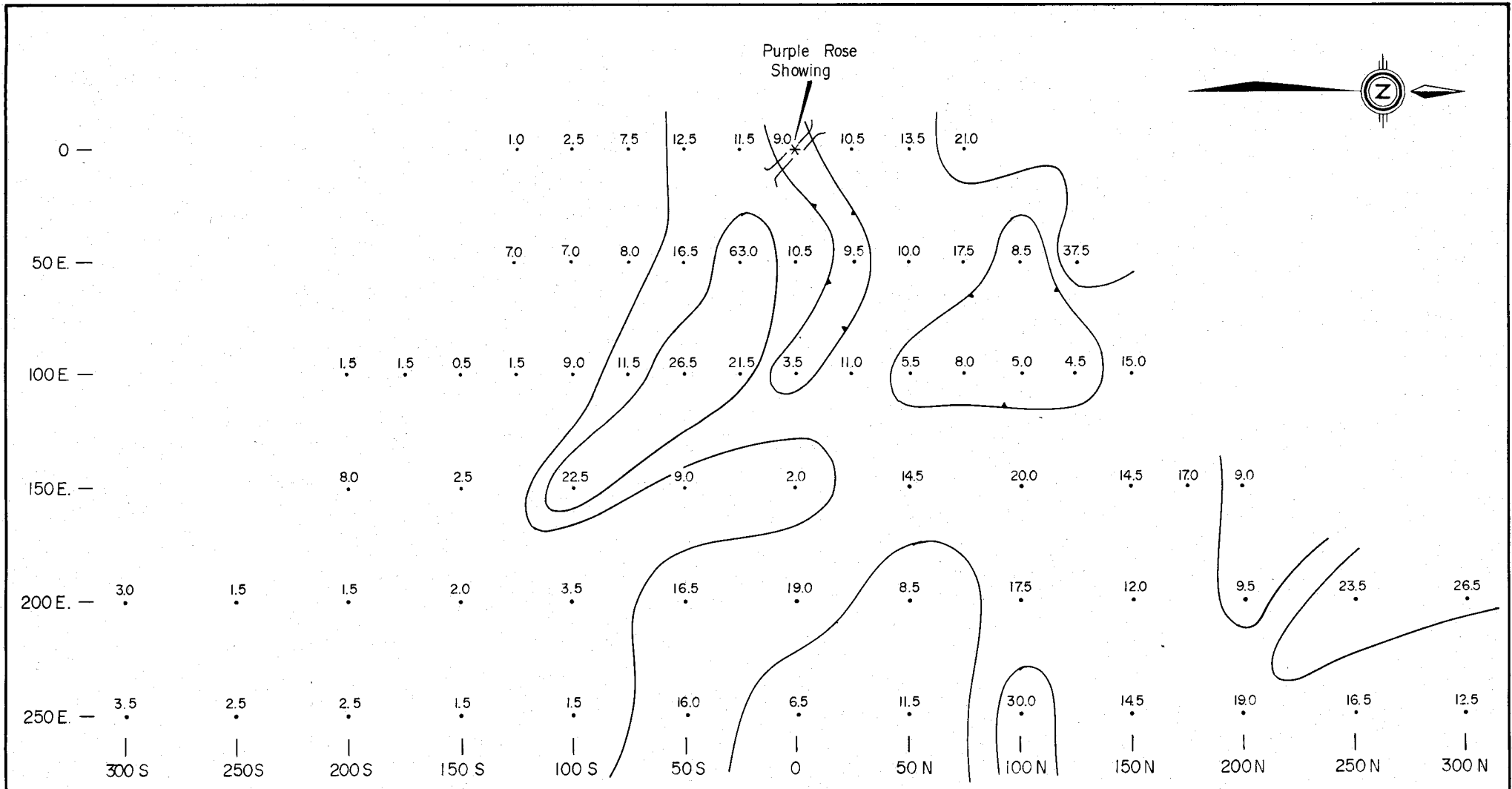
Results of the geochemical grid survey over the Purple Rose uranium occurrence are shown on a map (following this page) entitled "PATO Property - Uranium Geochemistry". Contour intervals are 10 and 20 ppm.

BREAKDOWN OF COSTS

(for assessment purposes)

| | | |
|-------------------------|---------------|--------------------------|
| Wages and salaries | \$405.00 | |
| Benefits | <u>135.00</u> | \$ 540.00 |
| Assay costs | | 300.00 |
| Meals and accommodation | | 350.00 |
| Mobilization | | 200.00 |
| Miscellaneous | | <u>300.00</u> |
| Total | | <u><u>\$1,690.00</u></u> |

Above costs apply to work completed on the PATO-1 mineral claim.



6469

LEGEND

- Sample location with uranium in p.p.m.
- Trench
- <10 ppm
- 10-20 ppm
- >20 ppm

| | | | |
|----------------------------------|-------------|------------|-------------|
| D. G. LEIGHTON & ASSOCIATES LTD. | | | |
| PATO PROPERTY | | | |
| URANIUM GEOCHEMISTRY | | | |
| PURPLE ROSE AREA | | | |
| | | | |
| PROJECT | PROJECT NO. | SCALE | DATE |
| M.U.G. | 101A | 1: 250,000 | OCT. - 1977 |

CERTIFICATION

I, R.R. Culbert, do hereby certify that:

1. I am a practicing Professional Geological Engineer with offices at 3152 West 10th Ave., Vancouver, B.C.
2. I am a graduate of the University of British Columbia, BaSc. (1964), PhD. (1971).
3. I have practiced mining exploration for fifteen years, most of which were based in British Columbia.
4. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.
5. I have personally visited the PATO property and supervised exploration work carried out there.

Respectfully submitted,

R.R. Culbert, PhD., P.Eng.

Dick Culbert

30 September, 1977

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

Corner 15th Street and Bewicke

705 WEST 15th STREET

NORTH VANCOUVER, B.C.

CANADA

ANALYTICAL PROCEDURE REPORTS FOR
ASSESSMENT WORK

Procedure for Uranium Analysis:

Rock, soil and silt samples are dried at 110°C and then rocks are crushed and pulverized to -80 mesh.

Soils and silts are sieved and the minus 80 mesh fraction is retained for analysis.

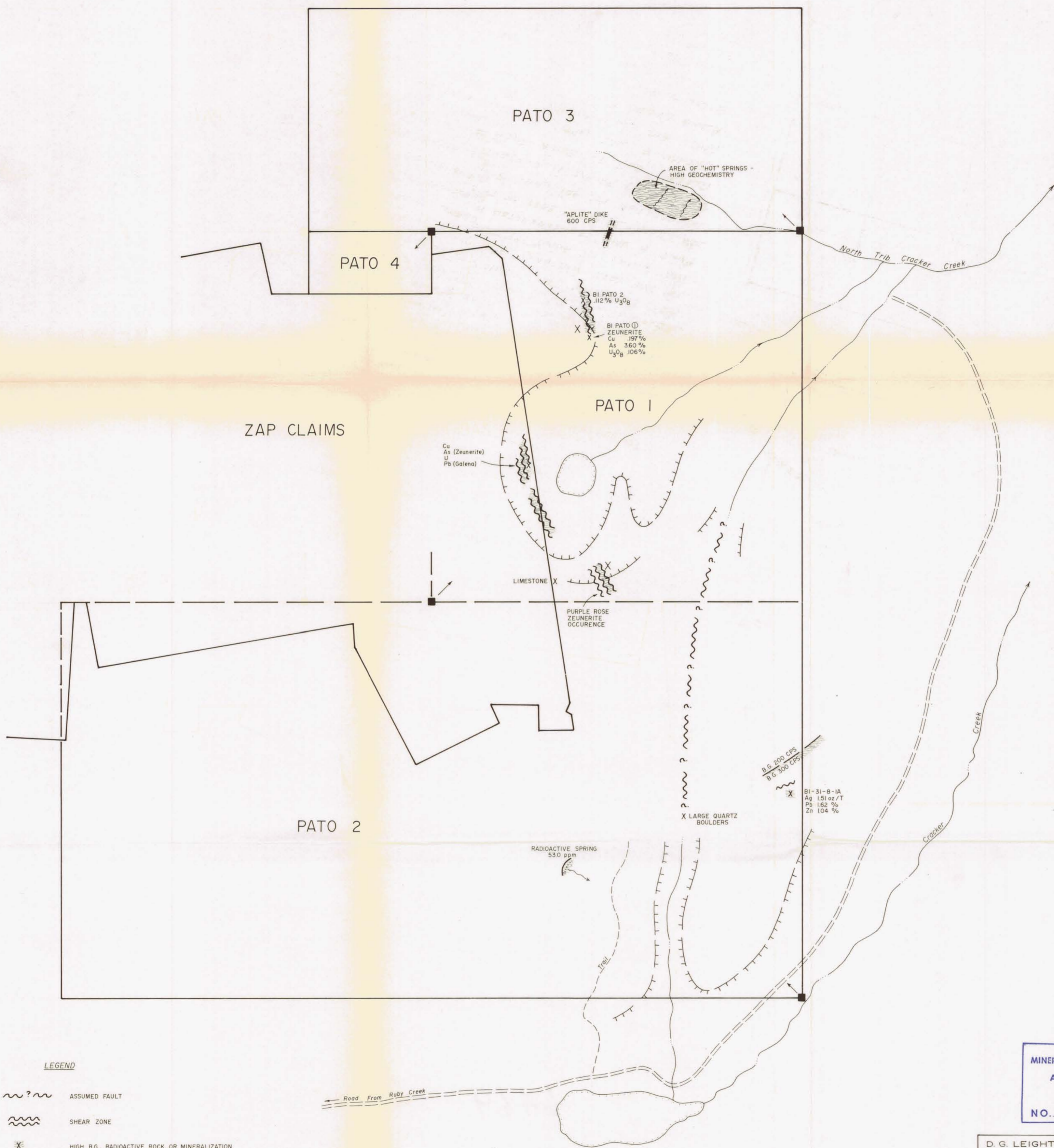
1.000 g. sub-sample is weighed and digested for eight hours with HNO_3 and HClO_4 .

Then the uranium is separated chemically from other possible interfering ions as Mn, Fe, etc.

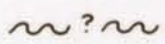
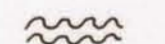

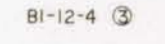

After preparation a suitable aliquote is taken and fluxed to form a 1.5 inch diameter discs in platinum dishes.

These salt discs then are compared and measured along with suitable standard with a Jarrell Ash Fluorometer.

The results are calculated accordingly to the sample aliquotes used from standard graphs.



LEGEND

-  ASSUMED FAULT
-  SHEAR ZONE
-  HIGH B.G., RADIOACTIVE ROCK, OR MINERALIZATION
-  ROCK SAMPLE LOCATION & NUMBER
-  LEGAL CORNER CLAIM POST

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. **6469**

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PATO PROPERTY
PROSPECTORS SKETCH

METRES 100 0 100 200 300 400 500 METRES

| | | |
|------------------------|-----------------------------|---------------------|
| SCALE: 1 CM = 100 M | DRAWN BY: R. J. BILQUIST | DATE: SEPT. 1977 |
|------------------------|-----------------------------|---------------------|