MAR 19760011: TURTLE LAKE

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<table>
<thead>
<tr>
<th>PAGE</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Summary</td>
</tr>
<tr>
<td>2</td>
<td>Recommendations</td>
</tr>
<tr>
<td>3</td>
<td>Introduction; Remote Sensing</td>
</tr>
<tr>
<td>4</td>
<td>Remote Sensing</td>
</tr>
<tr>
<td>5</td>
<td>Permit Acquisition and Option Exploration (Method)</td>
</tr>
<tr>
<td></td>
<td>Topography</td>
</tr>
<tr>
<td></td>
<td>Exploration Targets</td>
</tr>
<tr>
<td>6</td>
<td>General Geology</td>
</tr>
<tr>
<td></td>
<td>Uranium Occurrances</td>
</tr>
<tr>
<td>7</td>
<td>Time and Personnel</td>
</tr>
<tr>
<td></td>
<td>Logistics</td>
</tr>
<tr>
<td></td>
<td>Lakes</td>
</tr>
<tr>
<td></td>
<td>Work Completed</td>
</tr>
<tr>
<td>8</td>
<td>Summary of Plates 1 through 18 Inclusive</td>
</tr>
<tr>
<td></td>
<td>Geophysical Instruments</td>
</tr>
<tr>
<td>9</td>
<td>Anomalous Location</td>
</tr>
<tr>
<td>10</td>
<td>Anomalous Location</td>
</tr>
<tr>
<td>11</td>
<td>Exploration General</td>
</tr>
<tr>
<td></td>
<td>Samples</td>
</tr>
<tr>
<td>12</td>
<td>Samples</td>
</tr>
</tbody>
</table>
SUMMARY

1) Four Radiometric anomalies indicative of uranium mineralization, were found, three in granitic rocks and one in metasedimentary rocks.

2) Surface chip sampling indicates two anomalous areas, Sample #26 coincides with Radiometric anomaly #2, while Sample #8 is in area D, in metasedimentary rocks but not associated with a radiometric anomaly.

3) Outcrop areas surveyed were predominantly granitic with the exception of three areas of metasedimentary rocks, as follows:
   - A) North of Lake #1; 9000'N - 1000'E on east side of Creek.
   - B) At 2835' east on line between Lake #4 and the Allan Fault.
   - C) N/E of Lake #1, immediately adjacent to the lake shore. Known as area D.

4) Mineralization in the outcrop areas consisted primarily of Quartz in the granites and Iron, Graphite, Molybdenum, and Quartz in the metasediments.

5) Less than 20% of the permit area has been explored, the explored area is completely within the south-east quadrant of the permit area.

6) The Allan Fault is very distinctive and can be used as an access into the area of intersecting Remote Sensed Linears.

7) Cut and blazed lines can be used as a base for further exploration work.

8) Turtle Lake and Lake #4 are the only known lakes useable by aircraft.

9) Uranium City is a better base for logistical support than Fort Chipewyan.
RECOMMENDATIONS

A) Serious consideration of a possible air borne scintillometer survey over the complete permit area.

B) Serious consideration be given to a re-evaluation of the Landsat imagery using the photographs of some outcrop areas as ground truths.

C) To complete the surface prospecting of the permit area.
   1) Scintillometer survey of outcrop and lightly mantled areas.
   2) Radon gas survey of heavily mantled areas, principally the N/W section of the permit area and sand ridges throughout the complete area.
   3) Delineation of the known exposures of meta-sedimentary rocks with associated mineralization, and further exploration to detect other meta-sedimentary areas.
   4) Sample lake bottom sediments for indications of Uranium Mineralization.

D) Short hole diamond drilling (Pack-Sack Drill) of known radiometric and chip sample anomalous areas discovered to date, and to drill other anomalies as they occur with additional exploring.
INTRODUCTION

A) Remote Sensing

Data from the Landsat satellite system provide a unique reconnaissance level search tool for minerals, gas and oil. This technique was applied to a search of North-Eastern Alberta and North-Western Saskatchewan for Uranium prospects with reflective characteristics similar to those of the Cluff Lake deposits in the Carswell Dome area of Saskatchewan.

The use of Remote Sensing in mineral exploration, i.e. the application of interpreted Landsat data, is a relatively new exploration technique, the most direct application of which, is to use a known mineralized ground truth site located within the same scene as the search area. No such site lies north of Lake Athabasca and within the Province of Alberta.

This search, therefore, returned to the previously used ground truth site at Cluff Lake and extended the use of that spectral signature to the next northern Landsat scene taken some 20 seconds earlier. In this manner, the possibility of calibration errors were kept to a minimum.

Two areas, one lying due north of Turtle Lake and the second, east of Burstall Lake were found which have the same spectral response as Cluff Lake, Saskatchewan.

A considerable bibliography is emerging on the subject of interpretation of Landsat images. One such class of observables are referred to as "Linears". These occur world-wide and appear as straight and slightly curved lines. In length, they vary from hundreds of miles to the resolution element of the data (about 300 feet.) While considerable controversy exists as to their exact geological meaning, there is no doubt that many are the surface expression of deep seated faults, fractures, joints, folds, and facies boundaries.

It has, for example, been established that fractures and faults in older rocks do propagate upward through younger rocks. Thus the linear set should include structural features which have had control, during deposition and concentration of mineralization.
Two methods are available to determine which sub-units of the full linear set have the greatest probability of alteration, even when ground truth data are not available. The first is to look for the maximum number of intersections and the second is to look for anomalous changes in surface reflection across the linear, the gossan or halo indicative of alteration. A maximum probability exists where the two occur together.

Additional evidences that the Turtle Lake and Burstall Lake areas are favourable ground is found from a structural analysis which indicates major intersections of linears, where the linears are also the boundaries of spectral reflections similar to the Cluff Lake ground truth site.
B) Permit Acquisition and Option

Exploration Permits #244 and 245, of 31½ and 78 sections respectively, called here after the Burstall Lake and Turtle Lake Permits were acquired by C and E Explorations Ltd., upon receipt of the completed Landsat study conducted by, "Denver Mineral Exploration Corporation", of Littleton, Colorado.

A 12% interest in each permit area was purchased by, "Pacific Petroleums", with an option to acquire further ownership.

Exploration

1) Method
   A) Scintillometer Survey
   B) Examination of outcrop areas for structure and mineralization.

2) Topography

   A) A one inch to one mile forest cover map showing the permit area, the major linear and curvi-linear features from the Landsat study was prepared. A second topographic map 1:50,000 scale, showing section, township and range was used as a base map for the ensuing geological exploration. The only lake in the permit area having a particular name is, "Turtle Lake". The other lakes were given an identification number 1 through 17.

   The country varies in elevation from 900 to 1,100 feet, most of the outcrop lies above the 1,000 foot contour. Walking is difficult in most areas because of dead fall in old burn areas and swamp. It is easier on the ridges and throughout the outcrop areas.

EXPLORATION TARGETS

From a perusal of the literature and air photo's it would appear that the areas most conducive to mineral accumulation could include the following, always realizing that actually, no portion of the permit area, can be taken for granted, as being productive or non-productive in a mineral sense.

A) Areas of Remote Sensed Linear and Curvi-Linear intersections.
B) Fault Zones.
C) The large expanse of Glacial-Fluvial material in the N/W portion of the permit area.
D) Occurrences of Meta-sedimentary rocks.
C) General Geology of Permit Areas

Permit area #245, "Turtle Lake", is located in the Pre-Cambrian area of North-Eastern Alberta, as shown on the geological map of Alberta. Research Council of Alberta Map #35.

It is an area of reputedly undivided Granitic Plutonic Rocks comprised of, biotite granite, porphyroblastic and porphyritic granite, some granite gneiss and meta-sedimentary rocks, "A".

The eastern edge of the permit area is reputed to be a contact zone between the rock units mentioned above, "A", and a granite gneiss, "Agg".

D) Uranium Occurrences

Vein Type

Uranium mineralization, primarily Uraninite and Pitchblende, is found in the Beaverlodge area, around Uranium City on the east end of Lake Athabasca, approximately 65 to 70 miles east of our permit area.

Some mineralization north of permit area #245 was found by Dr. J. D. Godfrey of the Research Council of Alberta, his discoveries are described in preliminary Report #58-4, "Mineralization in the Andrew, Waugh, and Johnson Lakes Area", North-Eastern Alberta. Briefly the mineral occurrences he mentions are three locations of Uranium grading 1.03; 3.93; and 3.29% U₃O₈ with accompanying Molybdenum of 0.69; 1.03 and 1.40%, respectively; the mineralization occur in meta-sedimentary rocks containing appreciable iron.

The uranium mineral occurrences both east and north of Lake Athabasca are in practically every case, associated with structure in the form of primary or secondary faulting.

2) Research Council of Alberta, Map #35
EXPLORATION

3) Time: and Personnel

A preliminary exploration program utilizing two geologists, a geophysical prospector and four assistants was conducted from August 25th to September 15th inclusive. B. V. McConnell, Professional Engineer, and E. M. Estabrooks, Professional Geologist, were the Geologists employed in the project while L. C. Card was the Geophysical prospector. The four assistants were utilized from August 25th to September 6th inclusive and were employed primarily as line cutters but were also used in a cooking and prospecting capacity where necessary.

4) Logistics

Uranium City was used as a supply base with Norcan Air supplying our principal means of transport. Supplies are more easily obtained in Uranium City than in Fort Chipewyan, the permit area being approximately equidistant between the two communities.

Norcan air used Otter, Beaver, and Cessna aircraft to conduct our camp moves and in transportation between the permit area and Uranium City. Groceries were purchased at the Eldorado Store and Hudson Bay Company, Hardware from the Uranium City Hardware and accommodation was secured at the Uranium City Hotel.

5) Lakes

Turtle Lake is one of the few lakes in the general area, upon which, an Otter can land. Hence our main camp was established on the north shore of Turtle Lake. Later, during the program, we were landed on Lake #4 by a Beaver Aircraft. Most other lakes in the permit area are unsuitable for any kind of aircraft usage. The lakes are shown and numbered on Map #4.

WORKS COMPLETED

20,550 feet of cut line and approximately 22,200 feet of blazed line were used as guides for our scintillometer surveys, examination of outcrops along these lines and the acquisition of surface chip samples from areas having anomalous scintillometer readings. 18 plates showing the locations of the various cut, blazed and scintillometer survey lines accompany this report.
Plate #1 - Location of Lakes; Cut and Blazed lines

- #2 - Surveyed portion of the permit area split into sub-areas, A,B,C,D,E,F, respectively.
- #3 - Area A - Anomaly #1 - Sample #19 (Granites)
- #4 - " B - Sample #11, Sample #24 (Granites)
- #5 - " C -
- #6 - " E -
- #7 - " E -
- #8 - " E -
- #9 - " E - Area of Meta-sediments - Sample #5 & #21.
- #10 - " E - Anomalies E-1, E-2, E-3; Anomaly #2 @11,050'N Sample #26 (Granites)
- #11 - " E -
- #12 - " E -
- #13 - " E -
- #14 - " E -
- #15 - " F - Meta-sediments (Barren)
- #16 - " D - Samples #25, 8, 15, 22: (Meta-sediments)
- #17 - " D - Anomaly #3 (Meta-sediments)
- #18 - " C1 - Anomaly #4 Granites

GEOPHYSICAL INSTRUMENTS USED

1) T.V.5 McPhar Scintillometer
   To: Total Count $T_1 = UR; TH$; POT: $T_2 = UR; TH$ $T_3 = TH$

2) Scintrex total count scintillometer, Model B6S-15
   Only capable of total count reading.

Through conversation with T. Truman, Exploration manager of Eldorado, a $T_1$ reading of 1500 counts on the T.V.5 McPhar or the French SPP2-RRAT scintillometers is usually indicative of Uraninite mineralization, a true indication of the cause of the higher scintillometer readings can only be acquired by the Pack-Sack drilling of the anomalous area, because of the leaching of the uranium and related minerals from the surface rock exposures.

A total of 328 total count and 99 $T_1$ count readings with the McPhar instrument were acquired over the area surveyed.

The T.V.5 McPhar instrument was used all most exclusively over granitic areas. It developed a malfunction near the end of the stay in the Turtle Lake camp and was not available when we discovered the area of meta-sedimentary rocks in areas F and D.
The scintrex Model 1BGS-1S was used along cut and blazed lines and on outcrops of granitic and meta-sedimentary rocks as they were encountered.

Estimated background of radiometric counts over granitic and meta-sedimentary terrain.

A) T.V.5 McPhar
- To = 8 to 10,000 Counts on 3 second interval
- \( T_1 = 300 \) to 400

B) Scintrex Model 1BGS-1S =
- Granitic outcrops To = 20/30 Counts/Second
- Meta-sediments To = 15/20

The level of radioactivity was assessed using the following relative scale: "significant" when radioactivity is in the range of 2.5 to 4 times background, "High" when radioactivity is 4 to 5 times background, and "Very High" when radioactivity is 6 times background or greater. For the purpose of this presentation, we have considered 3 times background and up, to be anomalous and deserving of further examination via short hole diamond drilling using a Pack-Sack diamond drill or trenching, to get below the leached zone, with a Plugger and related steel.

ANOMALOUS LOCATIONS BASED ON SCINTILLOMETER READINGS.

Using McPhar T.V.5 (Granitics)

<table>
<thead>
<tr>
<th>Plate</th>
<th>Location</th>
<th>Radioactive Counts</th>
<th>Anomaly #</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5000'N/400'W</td>
<td>( T_1 = 1400 )</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>5050'N/400'E</td>
<td>( T_1 = 1750 )</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>( T_1 = 1400 )</td>
<td>( T_2 = 750 ) ( T_3 = 600 ) Counts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( T_1 = 1750 )</td>
<td>( T_2 = 850 ) ( T_3 = 800 ) Counts</td>
<td></td>
</tr>
</tbody>
</table>

Using Scintrex Scintillometer (Granitics)

<table>
<thead>
<tr>
<th>Plate</th>
<th>Location</th>
<th>To = 1200 CPS</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>N/W Lake #1</td>
<td>To = 350 CPS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>To = &quot; CPS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>To = &quot; CPS</td>
<td></td>
</tr>
</tbody>
</table>
Using McPhar T.V.5 (Granitics)

<table>
<thead>
<tr>
<th>Plate</th>
<th>Location</th>
<th>Radioactive Counts</th>
<th>Anomaly #</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>11,050'N</td>
<td>&quot;D&quot; To = 50,000 Counts</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>&quot;A&quot;  T₁ = 1,600</td>
<td>Sub-Anomalies</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>&quot;B&quot;  T₁ = 39,000</td>
<td>A</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>&quot;C&quot;  T₁ = 1,400</td>
<td>B</td>
</tr>
</tbody>
</table>

"A"  To = 37,000 Counts
T₁ = 1,600  T₂ = 700  T₃ = 550
55' = T₀ 13,000  56'² = To 37,000  57' = 32,000  58' = 13,000

"B"  To = 39,000
118'N = To 16,000  1'W = 39,000  1'N = 22,000  1'N = 14,000

"C"  To = 22,000
T₁ = 1,400  T₂ = 450  T₃ = 300
126'N = To 17,000  127'N = 22,000  128'N = 22,000  129'N = 18,000

"D"  To = 25, (1)  42, (2)  44, (3)  50, (4)  Counts
1) T₁ = 1,200  T₂ = 1,000  T₃ = 500
2) T₁ = 1,500  T₂ = 1,000  T₃ = 600
3) T₁ = 1,800  T₂ = 1,000  T₃ = 650
4) T₁ = 1,700  T₂ = 1,400  T₃ = 1,000

<table>
<thead>
<tr>
<th>Plate</th>
<th>Location</th>
<th>Radioactive Counts</th>
<th>Anomaly</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>140'E</td>
<td>To = 600</td>
<td>3</td>
</tr>
</tbody>
</table>

Using Scintrex Scintillator?

140'E = To 15
145'E = To 600
146'E = 200
150'E = 15
1'N = 40
1'S = 60
EXPLORATION GENERAL

Our objective during this first preliminary stage of exploration was to proceed northward from Turtle Lake to Lake #4, thence east to the Allan Fault area, then south to the area of intersection of the two major straight lineaments of the Remote Sensed study.

We managed to reach the Allan Fault area during the time available, hence a relatively small portion of the permit area, approximately 20% was covered during the initial ground exploration. Additional exploration will be required to determine the significance, if any, of the linear and curvilinear surface features and their relationship to uranium mineralization.

Most of the exposed rock along the cut and blazed lines was granitic in one form or another, with two small areas of meta-sediments, one in area F between Lake #4 and the Allan Fault, the other being in the east side of the creek, north of lake #1 and 1000' east of the cut line at 9000'N.

A large exposure of meta-sedimentary rocks is located on the North-East shore of Lake #1, on area D, from which we acquired a number of samples, locations of which are shown on Plate #16. One anomalous scintillometer reading was acquired in this area and is depicted on Plate number 17. Plate #17 is missing.

Further exploration of the area designated as "D", and the country directly north and south of Lake #1 and on the South-East side of the Lake as well. These southern outcrops would be partially outside our southern permit boundary.

SAMPLES:

Surface rock chip samples were acquired from most of the anomalous scintillometer count areas, and some were acquired from the meta-sediment area designated as area "D". The locations of the samples are shown on the accompanying plates.

<table>
<thead>
<tr>
<th>Plate</th>
<th>Area</th>
<th>Sample</th>
<th>U3O8 (PPM)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-</td>
<td>3</td>
<td>B</td>
<td>1.1</td>
<td>(Granitic)</td>
</tr>
<tr>
<td>TL-</td>
<td>4</td>
<td></td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>TL-</td>
<td>14</td>
<td>D</td>
<td>12.3</td>
<td>(Granitic)</td>
</tr>
<tr>
<td>TL-</td>
<td>16</td>
<td></td>
<td></td>
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</table>

Sample 22: 5.61% Fe, .001% Mo

Sample 8: 7.9 PPM (Meta-sediment)
Samples, continued.

<table>
<thead>
<tr>
<th>Plate #16</th>
<th>Area D</th>
<th>Sample #8</th>
<th>9.41% Fe</th>
<th>.004% Mo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>#22</td>
<td>4.5 PPM U$_3$O$_8$ (Meta-sedimentary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.1% Fe</td>
<td>.006% Mo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>#25</td>
<td>4.5 PPM U$_3$O$_8$ (Meta-sedimentary)</td>
<td></td>
</tr>
</tbody>
</table>

It is suggested that further exploration, in the areas of Samples #8 and #26 having 7.8 and 12.3 PPM of U$_3$O$_8$ in surface chip samples that were susceptible to leaching, is necessary to determine their significance and extent.
PERMIT 245

TURTLE LK

Scale 2 Miles = 1"
SCALE 1 MILE = 1"

LINEARS & NESTING OVA I S IN PERMIT AREA.

MAP #3
AREA A T.L.
ANOMALYZONE

---

CUT LINE

---

THE MEPHRAR SCINTILLOMETER T1
500'E 400'W T, 1400
500'N 1000' T, 1750
T, U, TH, K: T2 TH, U: T3 TH,
850 800
1750 800
19760N
TL-Plate 3

PLATE 8 B.
Scale 1" = 10'
AREA "E" T. L.

19760311
TL-Plate 9

Flute 9

SCALE 1" = 210'
AREA "E" T. L.

PLATE #11

SCALE 1" : 210'
AREA "E" T. L.

ANOMALOUS AREA LIES EAST OF
CUT LINE BETWEEN 11,010' N AND 12,000' N.
DETAILS ON PLATES 13 AND 14.

CUT LINE.

1200' N 53° 22'

TO LINE 0'.
AREA E \( \text{72-PLATE \#13} \)

Total count in thousands:
\( T \approx 5,000 \) shown as 5, etc.
Closes to 1: 1500
1" = 120

Scale 1:50,000

NO WAY!

or lake #4

would be

here.

Sub-anomalies (1) A.
(2) B.
(3) C.
(4) D.
Together constitute anomaly #2 in the report.

Localized anomaly
55'-56'  To = 37,000 Counts
\( T_1 = 1600 \)"
\( T_2 = 720 \)"
\( T_3 = 550 \)"

Spot anomaly
To = 39,000 Counts
Metasediments
mainly schistose rocks
(biotite + chloritic)

AREA D
Metasediments
Scale 200' = 1"
TL - Plate #16

Sci-Trex Total Count
To = Total Count Readings

SAMPLE #12:
2.4% Fe 1.6% Mo 5.0% Ni 0.5% O3 Graphite

SAMPLE #14:
3.0% Fe 2.0% Mo 4.0% Ni 0.3% O3 Graphite

SAMPLE #16:
5.5% Fe 3.8% Mo 8.0% Ni 1.0% O3 Graphite

SAMPLE #21:
4.8% Fe 2.0% Mo 5.0% Ni 0.5% O3 Graphite

SAMPLE #25:
4.5% Fe 1.5% Mo 7.0% Ni 0.3% O3 Graphite

LAKES
PORTAGE LAKE
Scale: 1:50,000

ANOMALY #3
H. Fe, Mo, Graphite, QF2, Cu (min.)

ANOMALY #5
H. Fe, Mo, Graphite, Magnetite.

BACKGROUND
To = 15/20
ALONG BLASED LINE N/W 4 N OF LAKE #1.

SCALE = 100' = 1" ON LINE

LAKE SHORE NOT TO SCALE

CPS READINGS ON SCINTREX MODEL 1855-15

BACKGROUND ON GRANITIC OUTCROP TO 20/30 COUNTS
<table>
<thead>
<tr>
<th>PAGE</th>
<th>SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Summary</td>
</tr>
<tr>
<td>2</td>
<td>Recommendations</td>
</tr>
<tr>
<td>3</td>
<td>Introduction; Remote Sensing</td>
</tr>
<tr>
<td>4</td>
<td>Remote Sensing</td>
</tr>
<tr>
<td>5</td>
<td>Permit Acquisition and Option Exploration (Method)</td>
</tr>
<tr>
<td></td>
<td>Topography</td>
</tr>
<tr>
<td></td>
<td>Personnel and Logistics</td>
</tr>
<tr>
<td>6</td>
<td>Personnel and Logistics</td>
</tr>
<tr>
<td></td>
<td>Exploration Targets</td>
</tr>
<tr>
<td></td>
<td>General Geology of Permit Area</td>
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<td>Known Uranium Occurences</td>
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<td>7</td>
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<td>Geophysical Equipment</td>
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<td>Anomalous Locations within Exploration Areas (A &amp; B)</td>
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<tr>
<td>8</td>
<td>Anomalous Locations within Exploration Areas (C, D, &amp; E)</td>
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BURSTALL LAKE URANIUM EXPLORATION PROGRAM

SUMMARY

1) Exploration sub-areas A through E shown on Plates 4 through 8.

2) Those were lines that were walked by one or more geological personnel using Scintrex and a French model Scintillometer.

3) Area A — has one anomaly (Plate 4)
Area B — " " (Plate 5)
Area C — Anomalous (Plate 6)
Area D — Two anomalous regions (Plate 7)
Area E — Significant but not considered anomalous.

4) Ten surface chip samples submitted for assay, results are as follows; .013, .008, .026, .028, .082, .002, .028, .007 and .329% U₃O₈ respectively. (Plate 11 - Assay Report)

5) Sample #53; .329% U₃O₈; CPS reading 10,000 depicted on Plates 6 and 10.

6) Explored areas primarily granitic country rocks, with localized areas of meta-sedimentary rocks.

7) Exploration took place between September 16th and 23rd inclusive.
BURSTALL LAKE URANIUM EXPLORATION PROGRAM

RECOMMENDATIONS

A) Serious consideration be given to a re-evaluation of the Landsat imagery, using photography of some outcrop and lightly mantled areas as ground truthing.

B) Serious consideration be given to a possible air-borne scintillometer survey over the complete permit area.

C) Complete the surface prospecting of the permit area.
   1) Scintillometer survey of outcrop and lightly mantled areas.
   2) Radon gas survey of heavily mantled areas.
   3) Delineation of known exposures of meta-sedimentary rocks with associated mineralization and further explanation to detect other meta-sedimentary areas.
   4) Sample Lake bottoms sediments for indications of uranium mineralization.

D) Short Hole Diamond drilling using a pack-sack diamond drill of known radionetric and chip sample anomalous areas discovered to date.

E) Plane table geological mapping exercise in the vicinity of the complete area C with special emphasis on the locality of Sample number 53 (Plate #10)
URANIUM EXPLORATION

BURSTALL LAKE

North-Eastern Alberta, Exploration Permit Number 245

INTRODUCTION

A) Remote Sensing

Data from the Landsat satellite system provide a unique reconnaissance level search tool for minerals, gas and oil. This technique was applied to a search of North-Eastern Alberta and North-Western Saskatchewan for Uranium prospects with reflective characteristics similar to those of the Cluff Lake deposits in the Carswell Dome Area of Saskatchewan.

The use of Remote Sensing in mineral exploration, i.e. the application of interpreted Landsat data, is a relatively new exploration technique, the most direct application of which, is to use a known mineralized ground truth site located within the same scene as the search area. No such site lies north of Lake Athabasca and within the Province of Alberta.

This search, therefore, returned to the previously used ground truth site at Cluff Lake and extended the use of that spectral signature to the next northern Landsat scene taken some 20 seconds earlier. In this manner, the possibility of calibration errors were kept to a minimum.

Two areas, one lying due north of Turtle Lake and the second, east of Burstall Lake were found which have the same spectral response as Cluff Lake, Saskatchewan.

A considerable bibliography is emerging on the subject of interpretation of Landsat images. One such class of observables are referred to as "Linears". These occur world-wide and appear as straight and slightly-curved lines. In length, they may vary from hundreds of miles to the resolution element of the data (about 300 feet). While considerable controversy exists as to their exact geological meaning, there is no doubt that many are the surface expression of deep seated faults, fractures, joints, folds, and facies.

It has, for example, been established that fractures and faults in older rocks do propagate upward through younger rocks. Thus the linear set should include structural features which have had control, during deposition and concentration of mineralization.
Two methods are available to determine which sub-units of the full linear set have the greatest probability of alteration, even when ground truth data are not available. The first is to look for the maximum number of intersections and the second is to look for anomalous changes in surface reflection across the linear, the gossan or halo indicative of alteration. A maximum probability exists where the two occur together.

Additional evidences that the Turtle Lake and Burstall Lake areas are favourable ground is found from a structural analysis which indicates major intersections of linears, where the linears are also the boundaries of spectral reflections similar to the Cluff Lake ground truth site.
BURSTALL LAKE URANIUM EXPLORATION PROGRAM

D) Permit Acquisition and Option

Exploration Permits # 244 and 245, 31& and 78 sections respectively, called here after the Burstall Lake and Turtle Lake Permits were acquired by C and E Explorations Ltd., upon receipt of the completed Landsat study conducted by, "Denver Mineral Exploration Corporation", of Littleton, Colorado.

A 12% interest in each permit area was purchased by, "Pacific Petroleums", with an option to acquire further ownership.

Exploration

1) Method

A) Scintillometer Survey

B) Examination of outcrop areas for structure and mineralization.

2) Topography

A one inch to one mile forest cover map showing the permit area and the major linears from the Landsat study was prepared. A second topographic map, 1:50,000 scale, showing section, township and range was used as a base map for the ensuing geological exploration.

Topographically, the eastern and east central portion of the permit area has elevations in the range of 600 to 850 feet above sea-level, the ground rises to the east gradually with local areas of 1100 to 1150 foot elevation.

Most of the outcrop examined during the exploration program was above the 1050 foot contour, where the country rock is predominantly granitic, with localized relatively small patches of meta-sediments.

3) Personnel and Logistics

A) Three geological personnel in the persons of B.V. McConnell, Professional Engineer; E.M. Estabrooks, Professional Geologist; and L.C. Card, Geophysical Prospector were employed on the survey.

We arrived on location on September 16th and worked through September 23rd, returning to Calgary on September 24th.
B) Five major traverses were made (Plates 4 through 8) using a Bruntin compass for navigation. The traverses were started from either the Lake we camped on (Plate #2), Lake #1; or from north and south of Ness Creek, which is navigable by canoe or motor boat from the campsite on Lake #1, approximately 10,000' east.

C) Norcan air of Uranium City again supplied the transportation via an Otter aircraft for camp moves. Supplies were purchased in Uranium City from the Hudson Bay Company grocery store and Uranium City Hardware.

EXPLORATION TARGETS

From a perusal of the Landsat study; the Geologic map of Alberta, Map #35; and air-photos of the permit area, it would appear that the areas most conducive to mineral accumulation could include one or more of the following:

A) Areas of Remote Sensed Linear features. (Plate #2)
B) Fault zones in the Country rocks.
C) The large expanse of heavily mantled country on the east central portion of the permit area.
D) Occurrences of meta-sedimentary rocks.
E) Outcrops of granitic and pegmatitic country rocks.

GENERAL GEOLOGY OF PERMIT AREA

Permit #244, Burstall Lake area, is located within the Pre-Cambrian-archean aged rocks of North-Eastern Alberta, as shown on Geologic Map of Alberta, Map #35. It is depicted as being an area of predominantly porphyblastic granites and is designated as unit "Ap" on the map.

KNOWN URANIUM OCCURRENCES

There are no known recorded occurrences of Uranium mineralization in the area surrounding the limits of Permit #244. Exploration was conducted via various companies, north, east, and south of our particular permit area during the summer of 1976.

A geological report by Dr. J.D. Godfrey of the "Research Council of Alberta", is in the preparatory stages but will not be published for some time.
In discussion with T. Truman, Exploration Manager, Eldorado, it was learned that all Uranium occurrences eleven now to date in the Beaverlodge area and in the area west and north of our permit area, are associated with faulting and in most cases shearing. The pitch-blend of Eldorado, Beaverlodge, is in a dark reddish granitic rock which has a very distinctive appearance.

Geophysical Equipment

1) Scintrex Total Count Scintillator 1B6S-1S
2) French Scintillator SPP2-SRAT

The general background of Counts per second in the granitic rocks is in the range of CPS 30/50 for both instruments and from 20/30 in the meta-sediments. We felt that CPS readings of 5 times background are, "significant", 5/10 times background as "high", and anything over 10 times as being "Very High".

All of the areas we regard as anomalous are in the third category.

Wherever possible, chip samples of areas having high scintillator readings were collected, and submitted for assay. The results of which are shown in the assay report included in the study as Plate #11.

Anomalous Locations within Exploration Areas

Area A

1) Anomaly #1 (Plate #4)

CPS reading in two locations of 600/700 and 700/800 counts respectively, with chip sample #30 assaying 0.013% U₃O₈

Area B

1) Anomaly #1 (Plate #5)

CPS reading in an area approximately 8" to 1' wide, 15' to 20' long, striking S/W. CPS = 4,000 in a granitic host rock. Surface chip sample #28 assayed 0.059% U₃O₈.

A second locality with in this area had a CPS reading of 1,000 in a granitic host rock (Plate #5) and a surface chip sample that assayed 0.008% U₃O₈ relatively low compared to chip sample #28. However, the CPS reading is in the very high category.
Area C

1) This designated area as depicted on (Plate #6) is considered anomalous by the authors, a detailed plane table survey is required to accurately locate the stations with their accompanying scintillometer and chip sample locations.

CPS readings over 6 locations range from 1000 to 10,000 counts with surface chip sample assays ranging from .002% to 0.329% U₃O₈ in granitic and meta-sedimentary rocks. Plate #10 elaborates on the location, size and configuration of the area, that supplied a CPS reading of 10,000 counts and a surface chip sample assay of .326% U₃O₈.

Area D  Anomaly #1

This exploration area has two locations of anomalous CPS readings, are at location #1, i.e. CPS 2/3,000 counts with surface chip sample #38 giving an assay of 0.026% U₃O₈ in an altered biotite-sublithic host rock. (Plate #7)

Anomaly #2

A CPS reading of 1400/100 counts on a shear granite face is shown on (Plate #7). No surface sample was taken.

Area E

Two locations of CPS counts of 900 and 700/1000 respectively, were found, surface chip samples of the initial location having 900 CPS gave an assay result of .007% U₃O₈. Further work is required in the general area to determine if indeed, either of these two locations can be considered anomalous.
AREA "C"

\#1 - CPS 1,000 GRANITE & METASEDIMENT
\#2 - CPS 1,000 METASEDIMENT
\#3 - CPS 1500/3000
\#4 - CPS 1500/3000
\#5 - CPS 3500/5000 PEGMATITE
\#6 - CPS 10,000

SAMPLE #53: 32.9% U3O8
GRANITE (Deep Red Colour)

SCALE 1: 50,000

PLATE 6
AREA "D"

2 → CPS 200/400 - Granitic Host - Contains Blocks of Orthoclase Feldspar

1 → CPS 213000
Sample #39 - 0.26% U_3O_8 Host - Altered Biotite Schist

Scale 1: 50,000

Plate 7.
AREA "L"

#1 - 900 CPS vs background of 25
SAMPLE #35: .007% U3O8

#2 - 700/1,000 CPS - granitic contains phenocrysts of "orthoclase" feldspar.

SCALE 1: 50,000

PLATE 8
Descriptions of Area "C" Locations

Sample # 46: Area - Not to Scale:

Trend of Outcrop is North 35° East.

CPS 1400/1500
Sample # 46: 0.002% O₃O₈

Sample # 40: CPS 2000 0.028% O₃O₈

Along Edge
CPS 2000

CPS 900

Polymetitur X CPS 2000

Granite X

Strike NSW

Plate 9.
Descriptions of Area C Locations

Sample #53: Not to Scale

CP: 10,000
Sample #53: 32.6% U3O8

Continuous Reading along this line 300 CPS

Plate #10
<table>
<thead>
<tr>
<th>SAMPLE No.</th>
<th>Chemical U308 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Burstall Lake&quot;</td>
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<tr>
<td>Sample # 30</td>
<td>Sample # 28</td>
</tr>
<tr>
<td>Sample # 28</td>
<td>0.013</td>
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<tr>
<td>Sample # 52</td>
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<td>Sample # 48</td>
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<td>Sample # 34</td>
<td>0.002</td>
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<tr>
<td>Sample # 35</td>
<td>0.028</td>
</tr>
<tr>
<td>Sample # 53</td>
<td>0.007</td>
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</tbody>
</table>

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.

Licensed Assayer of British Columbia
QUARTZ MINERAL EXPLORATION PERMIT No. 245

C & E EXPLORATIONS LTD.,
52 CALANDAR RD. N.W.,
CALGARY, ALBERTA. T2L 0P6

DATE OF ISSUE - JUNE 15, 1976
AREA - 49,920 ACRES
10,302 ha

8094 ha - Permit 244

R. 4

R. 3 W. 4 M.