MAR 19810002: NORTH EASTERN ALBERTA

Received date: Jan 13, 1981

Public release date: Jan 14, 1982

AB10002

Farmers' Chemical Ltd.

ENGINEERS & OPERATORS OF PROCESS PLANTS & PIPELINES

CH 9-7956

CALGARY, CANADA
244 Wildwood Drive
27 December 1980

RECEIVED
JAN 13 P1: 02
ALBERTA ENERGY AND NATURAL RESOURSES

Mr. Eugene Saldanha
Senior Officer, Mineral Agreements
Petroleum Plaza - South Tower
9915 - 108 St.
Edmonton, Alberta T5K 2C9 File: Permit No.687907000**1**

Dear Sir:

[redacted]

In view of the circumstances I have only been able to attend to your letter today, at the earliest, and will be unable to attend to further exploration for several months. Therefore please cancel all permits including 687907000**1** and return the deposits ($22,000.00).

Yours very truly,

[redacted]

Edward L. Jones, P.Eng.

ELJ:B

P.S. The Asamera report of field exploration will be forwarded under separate cover, as promised.

EDWARD LEWIS JONES
PROFESSIONAL ENGINEER

REGISTERED
ALBERTA
BRITISH COLUMBIA
CALIFORNIA
TEXAS
OREGON
WASHINGTON
MONTANA
N.D.E.R. CERT. #1928

REGISTERED
JAN 12 ~~1980~~ 1981
MAIL

DIRECTOR - MINERAL AGREEMENTS
RECEIVED
JAN 13 1981

Farmers' Chemical Ltd.

ENGINEERS & OPERATORS OF PROCESS PLANTS & PIPELINES

CH 9-7956

[redacted]

CALGARY, CANADA T3C 3E
244 Wildwood Drive
5 January 1981

Mr. Eugene Saldanha, Senior Officer, Mineral Agreements
Petroleum Plaza - South Tower - Fifth Floor
9915 - 108 St.
Edmonton, Alberta
T5K 2C9

Re: Your Letter of 18 December 1980
Return of Deposits on 22 Permits
($22,000.00)

Dear Sir:

[redacted]

2. Your letter tells me that: either all the information in my letter report to you, complete with computer-map-printout, etc. was not transmitted to the Exploration Review Branch or the personnel thereof are not familiar with the accuracy of modern remote-sensing methods.

3. The Asamera report is herewith enclosed. Both E & B's report and Asamera's must not be excluded since they were contracted for in good faith during the term of the permits, but delayed by Government hiring all the helicopters.

4. The term and title of the permits are indefinite since final release of title was held up by 5 other departments (Environment etc.) veto-ing lands applied for. The rate per acre of 50¢ was doubled to $1.00 per acre for FARMERS' CHEMICAL LTD. too.

5. The exploration in the winter (impossible in the field) was carried on by computer-prepared maps showing the minerals as yellow dots or "B's" on the map on our permit acreage.

We submitted one to you for pitchblende which concurs with the radiometric survey published by the GSC.

Mr. Eugene Saldanha
5 January 1981

6. We gave evidence of results and expenditures. We will send a notarized statement.

7. The aeromagnetic survey is being sent to you.

8. Your professional geophysicists and geologists (please send names of them) who reviewed these data can refer to Capt. Ken Campbell, phone 427-2381, of the Alberta Remote Sensing Centre who will tell them of Farmers' Chemical Ltd.'s program, both light-scan and computer maps of minerals

plus

all the other successful ventures--like gypsum discoveries in B.C.--water in the Jordan desert, marijuana in Creston, etc. as well as Environment.

9. Farmers' Chemical Ltd. has done the exploration, acre-by-acre, in good faith so please send us our deposits back.

Yours very truly,

[redacted]

Edward L. Jones
President

P.ENG.
5 Jan. 1981.
EDWARD LEWIS JONES
PROFESSIONAL ENGINEER
REGISTERED
ALBERTA
BRITISH COLUMBIA
CALIFORNIA
TEXAS
OREGON
WASHINGTON
MONTANA
N.D.E.R. CERT. #1928

ELJ:B

cc: Capt. Ken Campbell

Farmers' Chemical Ltd.

ENGINEERS & OPERATORS OF PROCESS PLANTS & PIPELINES

CH 9-7956

CALGARY, CANADA
244 Wildwood Drive

Financial and Technical Contributors to This Project in N.E. Alberta

Mr. Frank Brown--Saskatchewan uranium mine developer
Mr. D'Arcy Brown--Exploration tool developer & operat
Mr. R.H. Morris- P. Eng. (Geol.)
Mr. John Stockwell--P. Geol.
Mr. Barry Wray--P. Geol.
Mr. Cam McFeeley--P. Eng.--B.C. uranium mine discover
Mr. J. Wyder--P. Geophys.
Mr. Dennis Kazakoff--B.A. (Econ.) Mining economist
Mr. Keith Banks--P.Eng.--exploration & logging tools--
spectral radiometer for signatures direct from o
Mr. Peter Schwerdt, Prospector
and Dr. Charles Steckel, F.R.S., a distinguished geologist
at the University of Alberta
Alberta & Southern Gas Co. Ltd.--
Giant computer for pipeline transmission used
Complete with all operating and maintenance
personnel for computed-mineral-maps printouts
acre-by-acre surveying
Mr. Lyndon Ferry P.Eng.
Mr. Gordon Nolan
Mr. Louis St. Pierre
Mr. Ian McKenzie
Mr. H. Booth and eight service personnel,
using satellite computer tapes and images
during 1979 to 1980 winter
Program and print-outs developed with guidance by
Edward Lewis Jones, P.Eng., and the help
of those above.

Statement of Value of Services and Supplies Rendered

1. On Quartz Mineral Permits

    6879070001 to 6879070011
    6879030005
    6879040001
    6897040002
    held by Farmers' Chemical Ltd.

2. Farmers" Chemical Ltd. persuaded a number of individuals and companies to perform valuable technical work and to contribute funds as follows:

    (See the attached list)

    The technical and financial for 8 men's contributions amount to $68,000.00

--some more than others, not including $24,750 in fees and deposits to the Alberta Minerals Dept.;

PLUS

--air photographs--$900.00 for N.E. Alberta (stereo pairs)
--spectral radiometer purchase (Banks) $5000.00
--satellite image tapes for computer & satellite images 2100.00
--computer time @ $1000/hour (17 men) 157,100.00
complete, incl. miscellaneous (large UNIVAC)
--Edward Lewis Jones, P.Eng., 200 days @ $500.00 per day(usual fee $550.00/day incl. expenses, & trips to Edmonton to see Dr. Charles Steckel, F.R.S. of Univ. of Alberta, a distinguished geologist & Mr. Ralph Gilmore P.Geol.)

3. Total Certified Value of Services Rendered & Supplies Made Availabl

8 men, professional mineral finders	$68,000.00
air photos, stereo pairs stereoscope	900.00
spectral radiometer, batteries, supplies	5,000.00
satellite image tapes for computer plus satellite images	2,100.00
computer time @ $1000.00/hour	157,100.00
Field exploration E & B Explorations) Asamera) Petrocanada)	27,000.00
Edward Lewis Jones, P.Eng. 200 days @ $500/day including aero-mag office survey but not including additional report writing	100,000.00
Legal	500.00
Total estimated value	@292,600.00

Notes: 1. Computer map-printouts showing the mineral occurrences on every acre (reduced to 20 acre dots on solid land) effectively reduce the time required for geologists to verify occurrences in the field and confirm, or otherwise, radio-active anomalies shown by the GSC uranium reconnaissance flown @ 400 ft.

2. References of successful computer and remote-sensing explorations are included in the report.

3. The aero-magnetic survey was performed and is included in the report. Uranium highs (GSC tracing, fits over GSC map of aeromagnetics) and occur in aero-magnetic lows.

Certified to be truthful:

[redacted] P. Eng.

Edward Lewis Jones P.Eng.
5 January 1981

EDWARD LEWIS JONES
PROFESSIONAL ENGINEER

REGISTERED
ALBERTA
BRITISH COLUMBIA
CALIFORNIA
TEXAS
OREGON
WASHINGTON
MONTANA
N.B.E.R. CERT. #1928

REPORT OF EXPLORATION
RELATING TO
FARMERS' CHEMICAL LTD.'S
QUARTZ MINERAL PERMITS
IN N.E. ALBERTA
NORTH OF LAKE ATHABASCA & EAST OF THE SLAVE RIVER

6,879,030,005
6,879,040,001
6,879,040,002
6,879,070,001 to 6,879,070,011

14 PERMITS 218,240 ACRES EQUIVALENT TO
22 PERMITS OF 10,000 ACRES EACH

CONTENTS:

Edward Lewis Jones and Associates
Consulting Engineers Ltd

EDWARD LEWIS JONES
PROFESSIONAL ENGINEER

REGISTERED
ALBERTA
BRITISH COLUMBIA
CALIFORNIA
TEXAS
OREGON
WASHINGTON
MONTANA
A.S.E.E. CERT. #1928

PREFACE

In November 1980 there was delivered by Mr. Edward L. Jones, P. Eng. personally to Mr. Ralph Gilmore, P. Geol. the following items in fulfilment of the work requirement on Farmers' Chemical Ltd's. 14 Quartz Mineral Permits in N.E. Alberta:

1. A letter report outlining the LIGHT-SCAN and COMPUTER-SCAN methods of prospecting by remote-sensing from Satellites.

   Farmers' Chemical Ltd. described fully the procedures used to develop a computed print-out map, scale 1:63,000 for pitchblend for all N.E. Alberta on which the computed pitchblend occurrences were shown high-lighted in yellow on Farmers' Chemical Ltd's. properties.

2. The pitchblend map already delivered is supplemented in this report with a computer-print-out-map showing GOLD placer occurrences in N.E. Alberta which was also given to the Director in November.

   Note the occurrences on the convex curves of the SLAVE River, an area out of bounds (by Environment) for field exploration.

   This report is intended to supplement the data given in Nov. 1980 to the Director of Minerals Agreements and to answer fully, in reply to Mr. Eugene Saldanha's letter of Dec. 18, 1980.

FARMERS' CHEMICAL LTD. is a company organized and registered in Alberta in 1961 by Canadian citizens residing in Alberta. It originally made fertilizer from spent alkylation acid in East Calgary.

The President, Edward Lewis Jones P. Eng. has had 40 years of engineering experience, including several as an engineer officer and air photo interpreter in Canadian Army H.Q. during the second war in Europe, where such work guided the Air Forces to enemy targets. Capt. Ken Campbell was there too.

Because Mr. Jones has practiced as a Consulting Engineer in Calgary for the last 24 years, he has wide acquaintances in the process and pipeline industries and is able to obtain services in many fields (e.g. computers) which would cost others in the market place, heavy money. He has American engineering experience too.

This project was originally financed by colleagues who are independent geologists and engineers in their own practices, or who are controllers of uranium mines, and public companies.

EXAMPLES OF PROSPECTING
BY SATELLITE IMAGERY & COMPUTERS

A. COPPER - an open pit copper mine at SAINDAK in the PAKISTAN desert was defined as a calibration point on the satellite computer tape and then the rest of the satellite tape was scanned for this same spectral signature.

Five new copper occurrences suitable for mines, were discovered.

Reference: "Mission to Earth: Landsat views the World. Plate No. 292 of 25 Nov. 1972"

See Capt. Ken Campbell of Alberta Remote Sensing Center Edmonton, phone 427 - 2381 who has a copy, and who can explain it.

B. GYPSUM in the East Kootenays

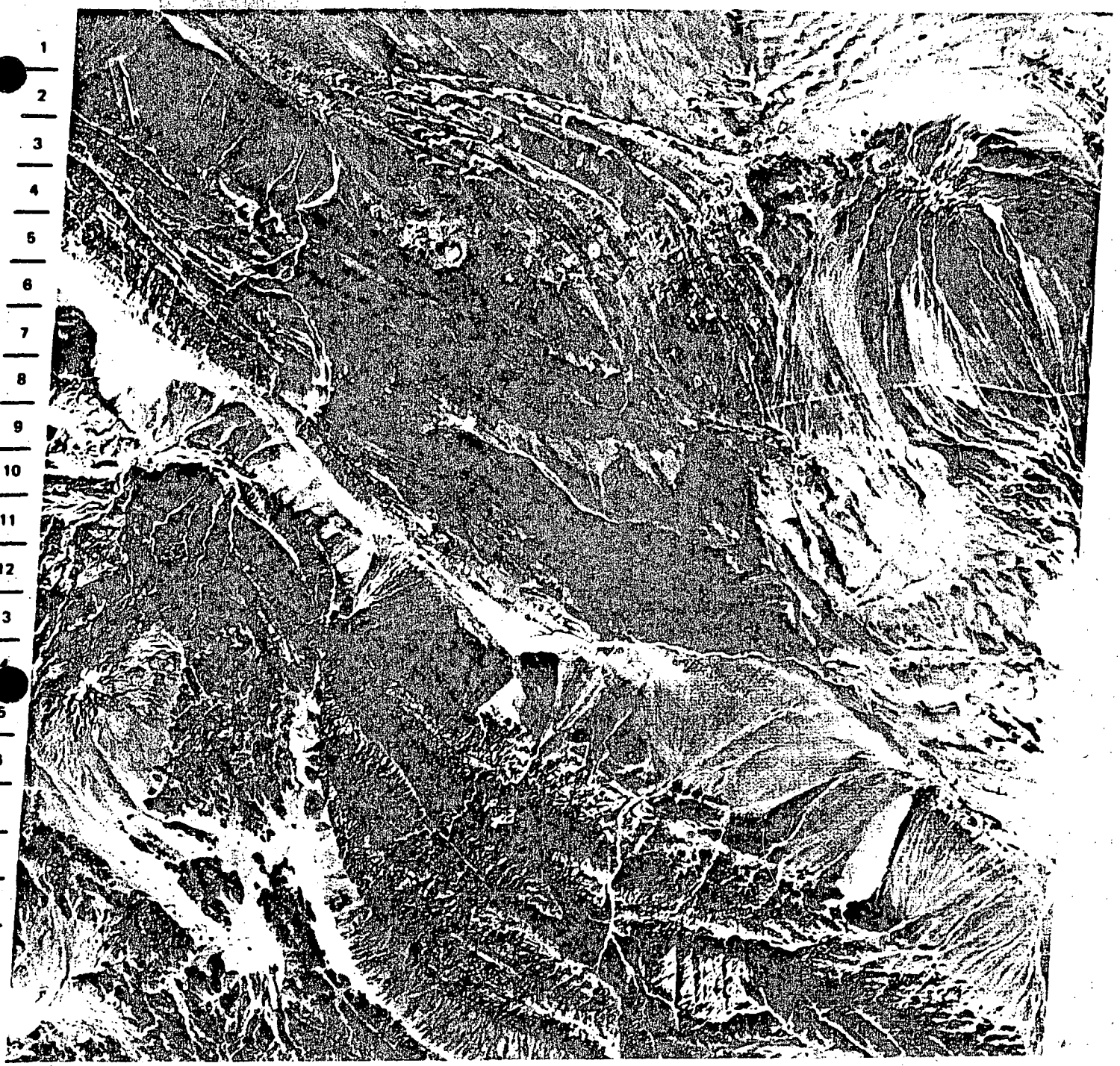
By obtaining the correct tapes with clear copy of the E. Kootenay area and feeding in a spectral signature for gypsum, a B.C. Geologist knowledgeable in the art of scanning computer tapes from satellites was able to discover 80 commercial deposits of gypsum suitable for wallboard.

One deposit was black, with 2% black impurities but 98% pure gypsum. No geologist would have recognized this deposit in the field, but the machine-scanner did.

Reference - Capt. Ken Campbell, phone 427 - 2381 also knows of this example, which was processed on the giant computer which CCRS has in Ottawa. A GIANT COMPUTER is necessary to process the enormous amount of satellite data on each tape 28 million bytes for 4 channels.

C. WATER IN THE JORDAN DESERT - CIDA

CIDA paid $ 100,000.00 to discover water in the desert in Jordan. The federal government and the B.C. Geologist working for the agency assisted the Jordanian Army Engineers by locating



THE BALUCHISTAN DESERT: This remarkable image is another of the experimental versions made by R. Bernstein of IBM in which the final photo product is made directly from computer tape data without the need to generate an internegative. Most specialists familiar with Landsat imagery consider this view to be an outstanding example of the quality of information (in terms of tonal balance and resolution) inherently extractable from the multispectral scanner data. It is certainly competitive with the best photographs obtained from the Skylab, Apollo, and Gemini missions.

The border between the westernmost end of Pakistan (*P*–7) and the eastern edge of Iran (*D*–27) lies along the Tahlab River (*I*–12). The Mirjawa Range (*K*–19) exposes folded and faulted sedimentary rocks of Cretaceous and Tertiary age. In places these rocks have been intruded by igneous plutons (*N*–21). The large dormant volcano, which straddles the Iran-Afghanistan border, reaches 2333 meters (7654 feet) in the western Chagai Hills (*P*–4). The edge of a series of longitudinal sand dunes (*D*–1; *K*–3) appears to the north. The main road and rail line (*P*–9) through northern Pakistan into Iran is visible north of the large Hamun-i-Mashkhel Playa (*V*–15). Several other auto roads pass through the junction town of Khāsh (*E*–20). At several localities, such as at Saindak (*D*–4), deposits of porphyry copper ores are associated with the metamorphic rocks around igneous intrusives. R. Schmidt, of the U.S. Geological Survey, has used the Saindak deposit as a reference site for "training" a computer classification program to recognize similar surface reflectance signatures in this Landsat scene. More than 20 other areas in the scene are classified as similar to the altered rock present at Saindak. At least five of these show signs of copper mineralization and are being

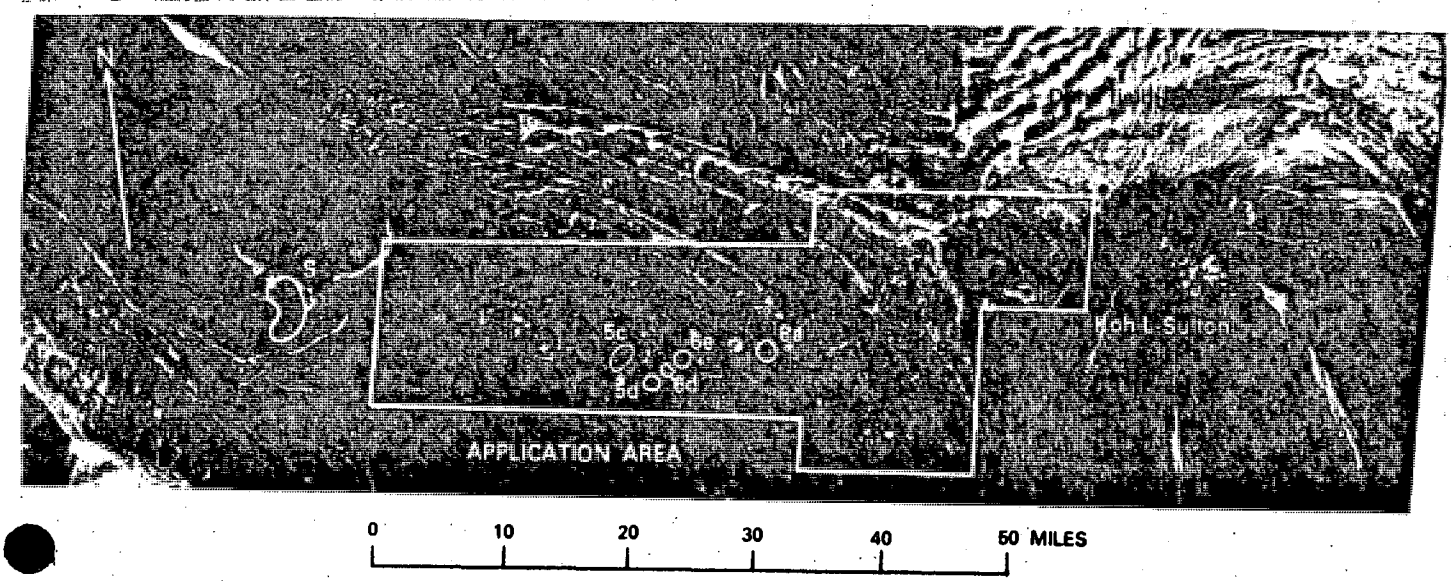


FIGURE 2.—Enhanced false-color composite of part of Landsat image 1125–05545. Location of the Saindak porphyry copper deposit is indicated by "S", new prospects located as a result of the digital processing experiment are shown at 5–c, 5–d, 6–d, 6–e, and 8–a. The light-toned patches at the crest of the volcano Koh-i-Sultan are altered rock resulting from fumarolic action.

the places to drill by surrogate means located from Satellite Images.

Reference: Capt. Ken Campbell, phone 427 - 2381 (@ intersection of faults).

D. U.S. GOVT. CONTRACTS for URANIUM LOCATION from SATELLITE IMAGERY

Denver Exploration Company scanned many Satellite Images to discover the frequency and distances apart of uranium occurrence

Reference: See Capt. Ken Campbell, phone 427 - 2381, the Environment library has a copy of this report.

E. URANIUM from ASTRAGALUS,

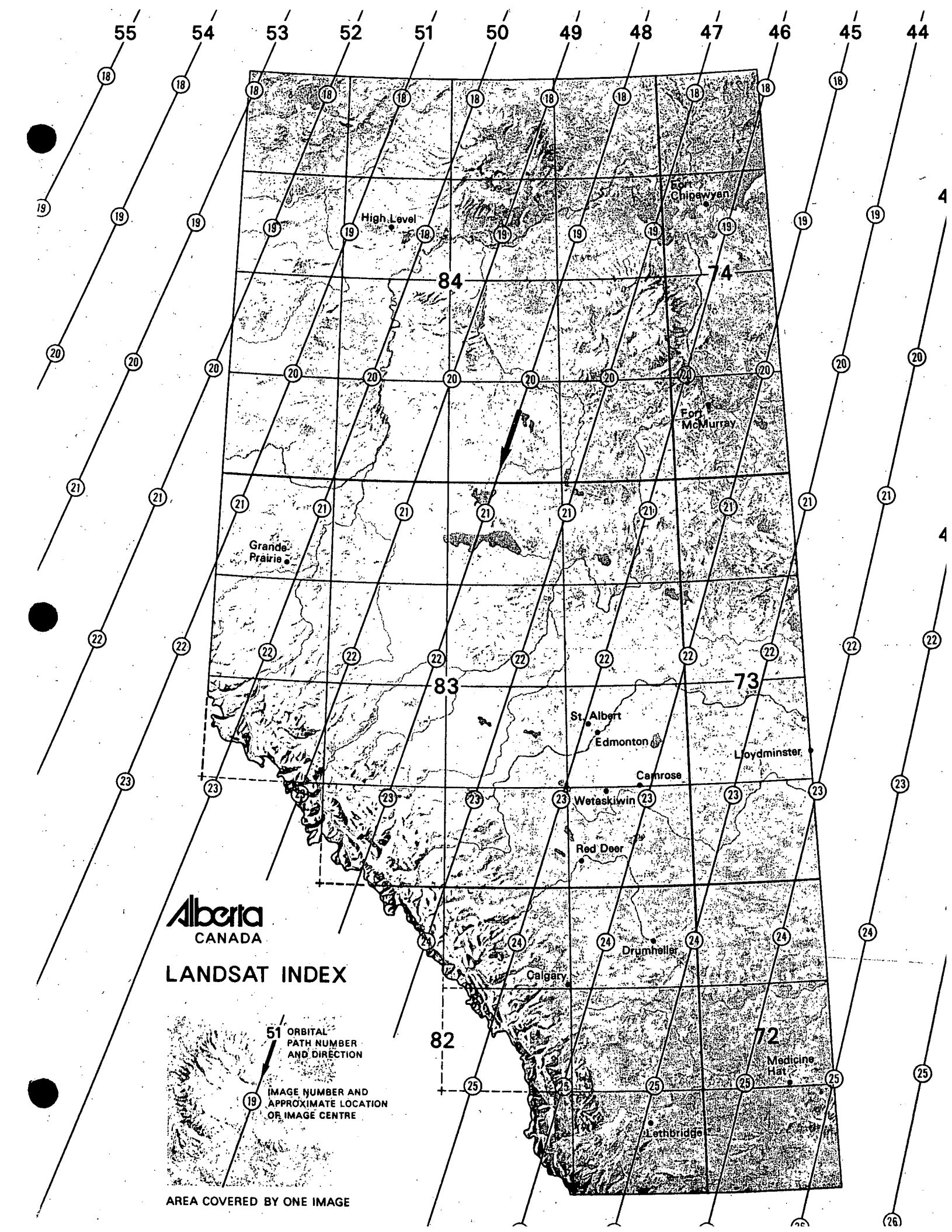
A vetch, poisonous to cattle, giving them the blind staggers from the selenium content. In sedimentary deposits, selenium occurs as an associated mineral with uranium. Helen Cannon, a U.S. G.S. Geologist found 5 uranium mines in this manner. From a spectral signature of the surrogate flower ASTRAGALUS, the sedimentary uranium can be located.

Reference: U.S.G.S. publications & Capt. Ken Campbell, who has them in Edmonton.

F. MARIJUANA near CRESTON B.C.

Food and agricultural experts were investigating world-wide yields from 32 different crops when a 33rd spectral signature occurred from 40 acres in the middle of oats near Creston, B.C. Field Investigation revealed the 40 acres to be marijuana and the RCMP were called.

Reference - Capt. Ken Campbell - other Environmental scanning examples can be spelled out to you by Capt. Campbell.


55
54
53
52
51
50
49
48
47
46
45
44
High Level
Fort Chipewyan
84
74
Fort McMurray
Grande Prairie
83
73
St. Albert
Edmonton
Lloydminster
Camrose
Wetaskiwin
Red Deer
Drumheller
Calgary
82
72
Medicine Hat
Lethbridge
Alberta
CANADA
LANDSAT INDEX
51 ORBITAL PATH NUMBER AND DIRECTION
19 IMAGE NUMBER AND APPROXIMATE LOCATION OR IMAGE CENTRE
AREA COVERED BY ONE IMAGE

"LIGHT SCAN" FINDS RADIO-ACTIVE HIGHS IN N.E. AREA

Without the precision available from the scanning of Satellite Imagery and tapes by a GIANT COMPUTER, it is possible to scan in a preliminary manner using light as a differential medium instead of a computer. There are instruments which can identify the exact shade of color, one out of 300,000 different shades, using a Satellite Image.

If the Satellite Image reflects 4 different wave-lengths in channels 4, 5, 6 and 7, then the resulting color is a specific spectral signature.

By using an open pit mine as a calibration point, the Satellite Image can be scanned, using this light-sensitive instrument to compare areas on the rest of the false-color-composite photo. Productive areas which are similar to the open pit mine show in the same color.

By this method Farmers' Chemical Ltd. discovered that there were radio-active highs in the area east of the big bend in the Slave River, north of Lake Athabasca, that were similar to the open pit uranium mine at Gunnar, Sask. (pitchblend).

A copy of this Satellite Image was delivered to the Dept. of Minerals in Edmonton in November 1980.

Upon publication of the Uranium Reconnaissance, flown at 400 ft., by the Geological Survey of Canada, it was verified that the radio-active highs thereupon shown agreed with those determined by the "LIGHT SCAN".

Satellite Images are selected by computer from listings over the years of surveillance, showing cloud cover, clarity, area, coordinates of lat. & long. etc.

COMPUTER SCANNING OF SATELLITE IMAGES

ACRE - BY - ACRE FROM SPECTRAL SIGNATURES OF ORES

The "LIGHT SCAN" is preliminary and only has a resolution of about 10 acres.

Better resolution, acre-by-acre, can be obtained from computer-scanning of the tapes from the Satellite.

The Satellite orbits the earth at 572 miles or 900 Km. and records an Image on tape every 6 seconds as it passes. The 28 million bits of computer information which make up each image are radioed to earth and recorded on computer tapes for the 4 channels of different wave lengths:

Visible Channel 4	500 to 600 nanometers
Visible Channel 5	600 to 700 nanometers
Invisible Infrared 6	700 to 850 nanometers
Invisible Infrared 7	850 to 1150 nanometers

Each pass of the Satellite occurs every 18 days - there are two showing and therefore a new Image is available every 9 days. Cloud obscures the Images.

THE SPECTRAL RADIOMETER IS THE KEY TO SPECTRAL SIGNATURES OF ORES, ETC.

Every ore has a different spectral signature, if the reflectance is measured in all of the 4 channels

The spectral radiometer obtained by FARMERS'CHEMICAL LTD. obtains readings in all 4 channels to give a spectral signature which corresponds to the key or combination to a lock. Each sample of ore has its own spectral signature.

Whenever the computer sees such a spectral signature, it prints out a capital "B", on the computer-map.

COMPUTER - PROGRAMMED TO PRINT OUT MAP

From the satellite data, a computer may be programmed to print out as a dot every acre of solid land, leaving blank any water. This map may then be scanned and the spectral signatures recognized and

printed out as a capital letter "A" or "B".

Such maps, acre-by-acre, when printed out would occupy a very large area, so the print-out was reduced to a dot for every 20 acres (5 pixels by 4 columns) to reduce the area to one more manageable.

However the scanning for spectral-signatures was still done on each acre, and a capital "B" printed out where one acre out of the 20 showed a spectral signature of the ore in question.

Such a computer-map printout for pitchblend was sent to the Dept. of Mineral Agreements in Nov. 1980 with the emphasis on the B's on Farmers' Chemical's properties high-lighted with yellow.

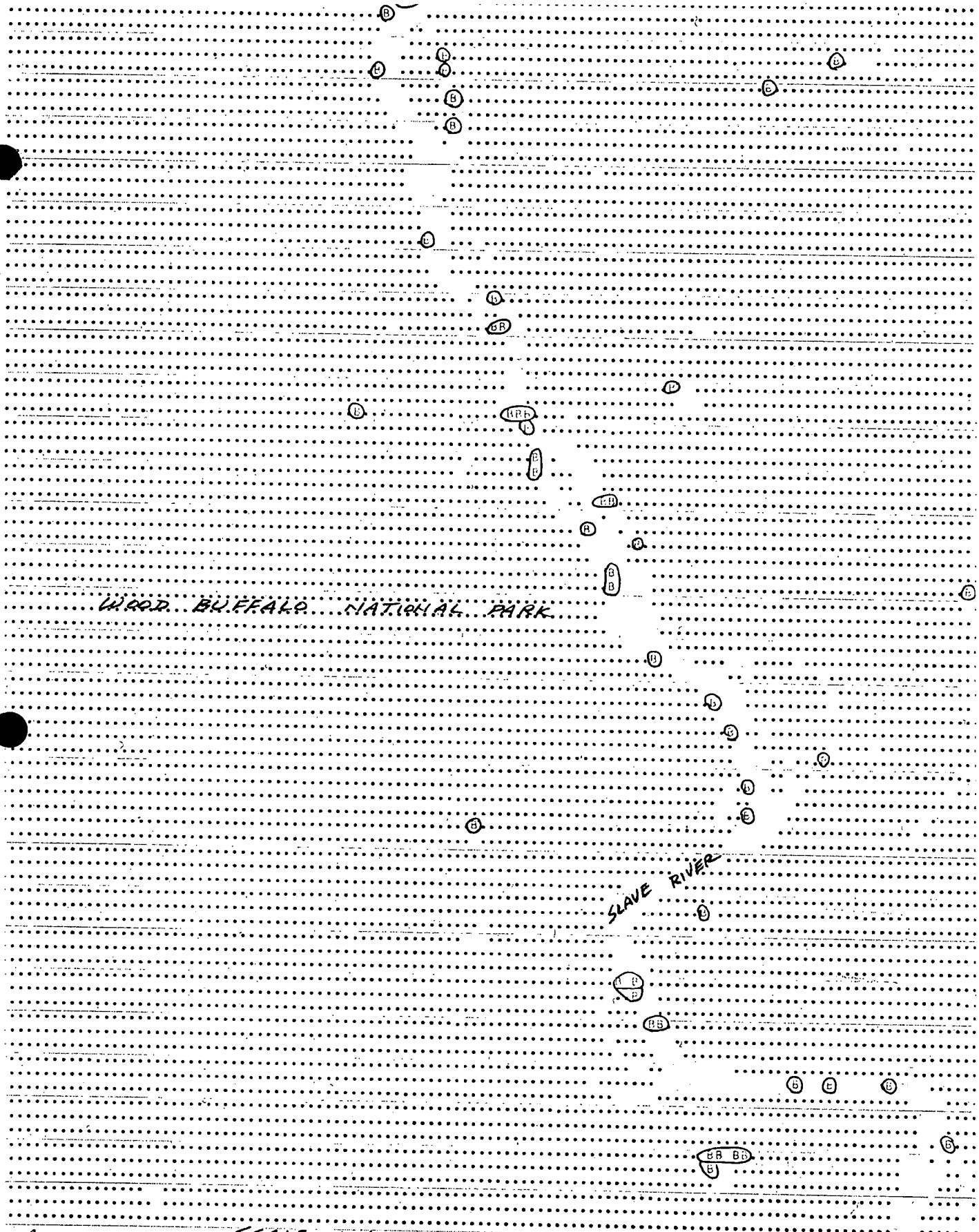
These areas, for pitchblend, occur close to the radio-activity noted on the GSC Uranium Reconnaissance flown at 400 ft. and published in 1979.

MANY ORES can be searched for by computer-scanning if the spectral signatures are known, and if a de-bugged computer program is prepared to use the satellite data in the 2 combined and 2 invisible channels.

The equipment required includes:

1. satellite digital tapes and satellite images
2. false-color composites
3. skew correction information
4. a spectral radiomenter (4 Landsat channels)
5. a GIANT COMPUTER capable of handling the enormous amount of satellite data
6. a de-bugged program on the computer to print-out a map (scale 1:63,000)
7. comparison maps - e.g. of the radio-active occurrences in the SASK. Crackingstone Peninsula which compared well with the computer-scan

The purpose of computer scanning is to limit the expensive (if available) geologists' time in the field and the expensive airborne transportation.

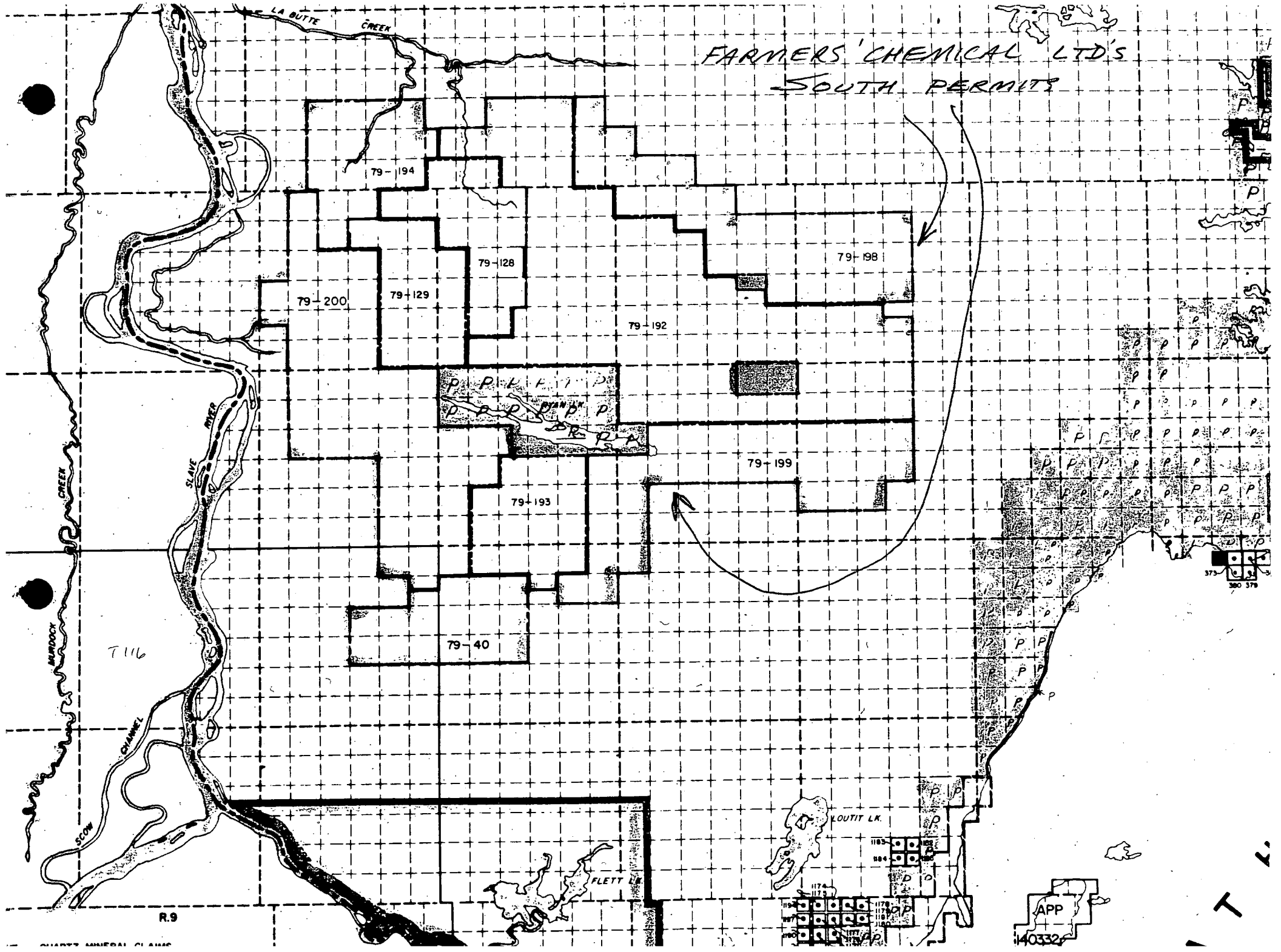


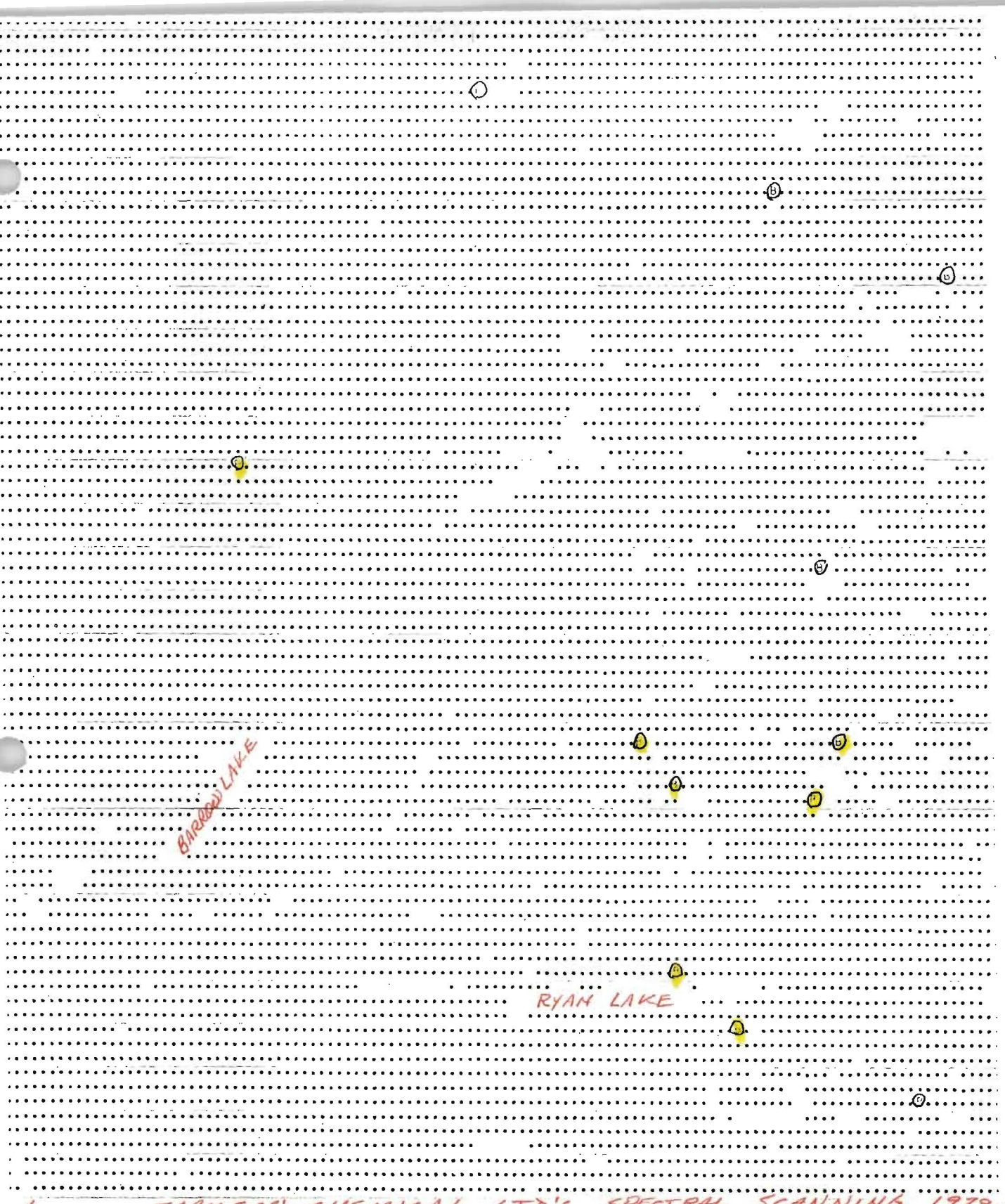
Am SCALE 1/136,000 OR 2.18 miles/inch

spectral scanning

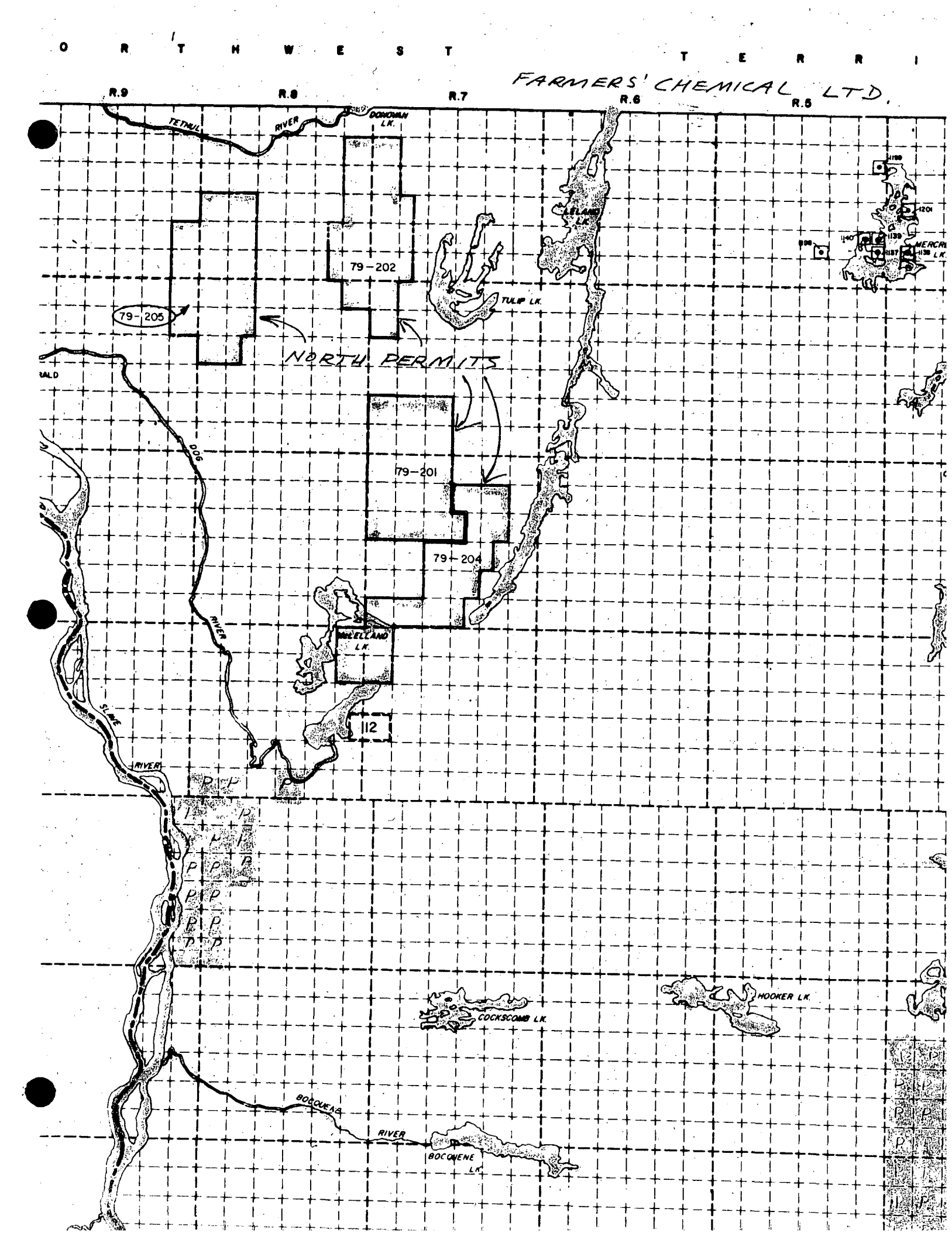
19810002

19810002


FARMERS' CHEMICAL LTD'S
SOUTH PERMITS
LA BUTTE CREEK
79-194
79-128
79-129
79-200
79-198
79-192
79-199
79-193
79-40
SLAVE RIVER
MURDOCK CREEK
SCOW CHANNEL
T116
R.9
LOUTIT LK.
FLETT LK.
APP
140332



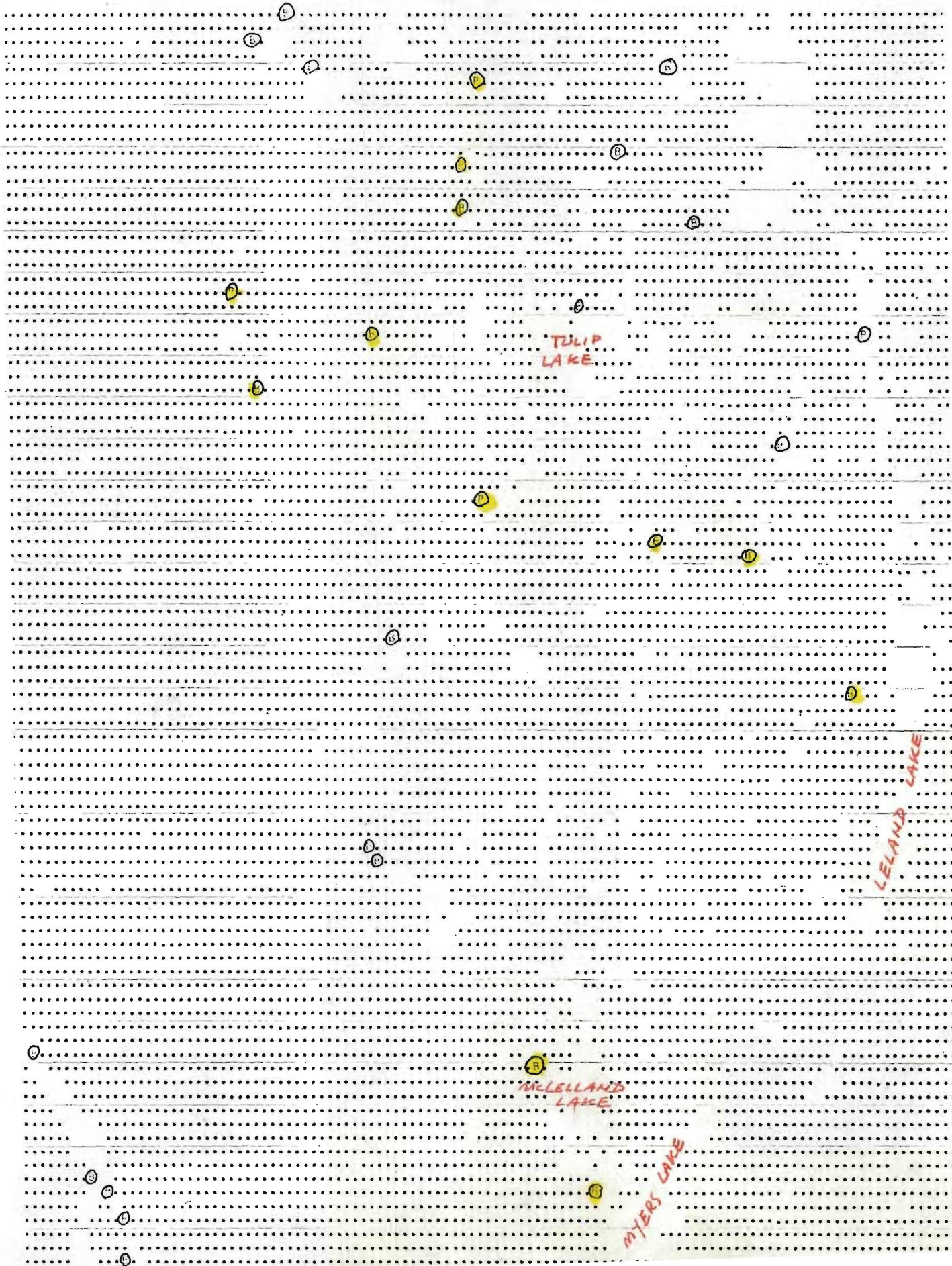
An FARMERS' CHEMICAL LTD's SPECTRAL SCANNING 1979-80
OF SOUTH PERMITS SCALE 1/136,000 OR 2.18 mi/inch

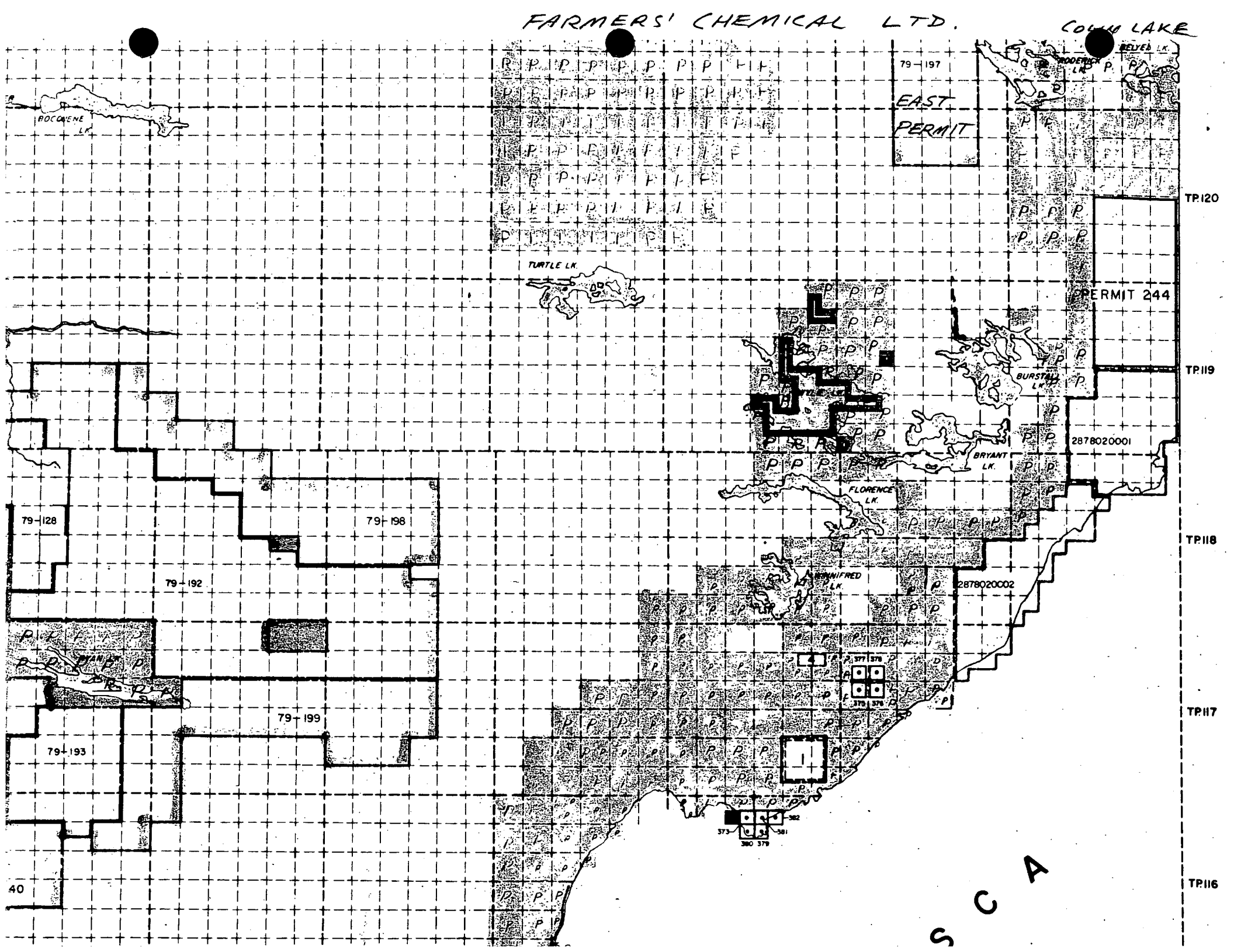

FARMERS' CHEMICAL LTD.
R.9
R.8
R.7
R.6
R.5
TETHUL RIVER
DONOVAN LK.
79-202
79-205
NORTH PERMITS
TULIP LK.
ELAND LK.
79-201
79-204
DOG RIVER
ELLAND LK.
112
SLAVE RIVER
COCKSCOMB LK.
HOOKER LK.
BOCQUENE RIVER
BOCQUENE LK.

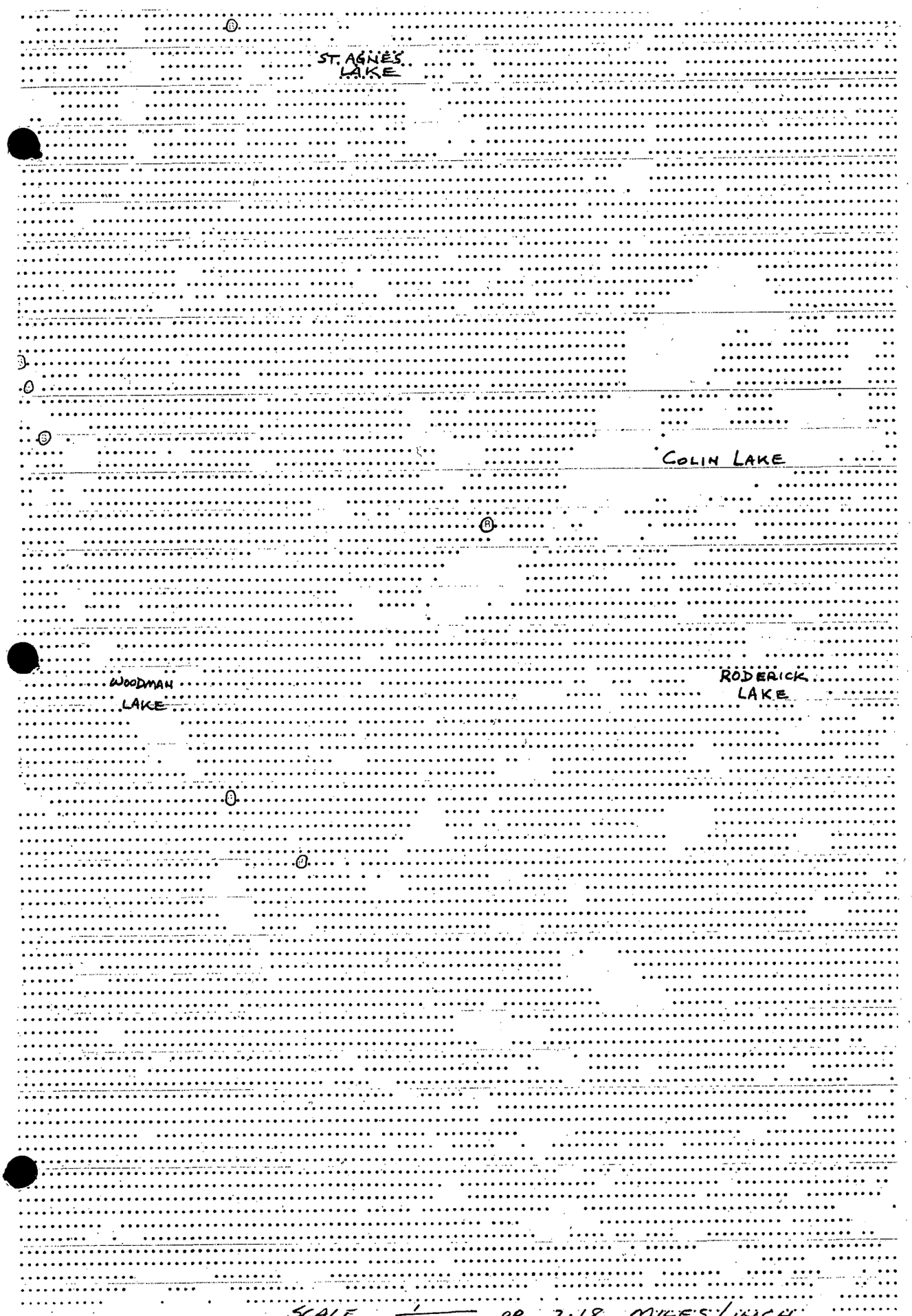
FARMERS' CHEMICAL LTD'S NORTHERN PERMITS IN ALBERTA

SCALE 1/136 000 OR 2·18 MI./INCH.

ISO378 M2 1960-03-31 (16)
BAND 7 ROWS 1 THRU 1143 BY 5 COLUMNS 529 THRU 1053 BY 4
CALTYP = 4 SCALE = 1000. RAD4 = .6400 RAD5 = .1300 RAD6 = .9000 RAD7 = .4400




FARMERS' CHEMICAL LTD.
COLLIN LAKE
79-197
EAST
PERMIT
BOCQUENE LK.
TURTLE LK.
PERMIT 244
BURSTALL LK.
BRYANT LK.
FLORENCE LK.
JENNIFRED LK.
2878020001
2878020002
79-128
79-198
79-192
79-199
79-193
40
TP.120
TP.119
TP.118
TP.117
TP.116



SCALE 1/136,000 OR 2.18 MILES/INCH.

FARMERS' CHEMICAL LTD'S EAST PERMIT 1979-80

GROUND TRUTH

(a) by Petro-Canada before the computer scan became available in late 1979 - lake bottom sampling and scintillometer checking of radio-active highs from the GSC Uranium Reconnaissance

(b) by E. &. B. Explorations Ltd. -inspected both highs on computer-printout-maps and on the GSC Uranium Reconnaissance and did find a needle-point of thorium. E. & B. paid to have a light-scan done on some Sask. properties too.

(c) by Asamera, who inspected the radio-active highs by landing a float-plane on one of the lakes.

None of the above are interested in proceeding further with the exploration.

MANY MINERALS SURVEYED

With samples of ores, it is possible to plot the locations of the surface reflectance signatures, determined spectrally, of many minerals. For N.E. Alberta, Farmers' Chemical Ltd. printed out location maps for:

Uranium - pitchblend, uraninite
Gold placers
Silver
Lead & zinc (Galena)
Copper
Barite
Phosphate rock (none in N.E. Alberta but some in Sask,)
Kimberlite (4 pipes shown on other areas)
(possible diamonds)

This developed program, carried on during the winter when field work is impossible, consists of much more than assessment work done by others.

AEROMAGNETIC CORRELATION WITH GSC URANIUM

Reconnaissance. (FITZGERALD)

The GSC Uranium highs were blown up to 4 miles to the inch - it costs about 3 weeks plus money to order these from TERRY SURVEYING in Ottawa.

The aeromagnetic survey is published by the GSC for FITZGERALD at 4 miles to the inch.

The aeromagnetic Lows are colored with "magic orange" on the aeromagnetic map. *

The overlay of the transparency of one on the other shows that uranium highs occur near aeromagnetic lows and that no uranium highs occur on the aeromagnetic highs.

This situation is general over N.E. Alberta, N. Saskatchewan and Manitoba, and we have correlated it.

Confirmation is available from the $ 116.50 book entitled "Uranium Exploration".

* NOTE: AEROMAGNETIC LOWS OCCUR ON THE FLANKS OF THE URANIUM HIGHS AND ARE THE BLACK DOTS SHOWN ON THE TRANSPARENCY WHICH CAN OVERLAY MAP 36374G OF THE GSC URANIUM RECONNAISSANCE FLOWN @ 400 FT.

HISTORY of this PROJECT BY FARMERS' CHEMICAL LTD.

A. In March 1979 Farmers' Chemical Ltd. applied for permits, which were subject to approvals by 5 depts. before granting.

B. SUSPICION was encountered from the Director of Minerals, Mr. Ralph Gilmore, P. Geol. who thought that Farmers' Chemical Ltd. had somehow become acquainted with the results of the joint Alberta - GSC Uranium Reconnaissance flown in 1971 and 1977 but not yet published them.

We showed him the "light scan" and explained how we had used it to determine the radio-active areas in N.E. Alberta by comparison with that of the Gunnar Mine in Saskatchewan on the same satellite false-color-composite image.

C. After 6 months, some of our permits were cut in half, being too close to the SLAVE river. The Dept. of the Environment wanted a one-mile-wide zone from the river, which is hard to define since the air photos show a widely-scoured riverbed, similar to strip-mined lands.

Farmers' Chemical Ltd. did not want abbreviated permits, and asked for other lands farther inland, but COMPLETE permits; the last in July 1979.

D. The Director doubled the rate from 50¢ per acre to $ 1.00 per acre for exploration for Farmers' Chemical Ltd. The GSC published the URANIUM RECONNAISSANCE on June 8, 1979, the ones flown in 1971 and 1977. Farmers' Chemical Ltd's applications for permits well covered the southern uranium highs.

E. Subsequently additional funds were raised to apply for permits for the eastern (S. of Colin Lake) permit and the northern ones. Permits were NOT cleared by Environment for another 3 months.

F. Petro-Canada explored the uranium highs, and the Ur/Th high-ratios shown on the GSC URANIUM RECONNAISSANCE flown at 400 ft.

They found the permit at Colin Lake to be near the highest content 440 ppm of U_3O_8 in the lake bottom sediments which they sampled in

"Soil Samples": ≈ 0.044% → not anomalous

late 1979. Their report and maps are in the possession of the Exploration Review Branch of the Dept. of Minerals (Alberta) since Farmers' Chemical Ltd. sent them.

G. Farmers' Chemical Ltd. cheerfully returned the 10 extra sections which in error, the Minerals Agreement Dept. had signed over to them (in the PELICAN NESTING AREA).

H. During the winter of 1979 and 1980, ore samples were obtained and spectral signatures were obtained from the 4-channel spectral radiometer furnished by the well-logging company ROKE OIL ENTERPRISES LTD. (Mr. Banks, P. Eng.) for these ores.

A computer program was developed on the GIANT pipeline transmission Computer. It was de-bugged, and modified to correct for the skew-attitude of the satellites. Messrs. L. Ferry, E.L. Jones and Louis St. Pierre travelled to Edmonton several times to learn the corrections required, and to order digital tapes and satellite images, after selection by computer print-out from the several satellites.

Alberta and Southern Computer personnel, with the blessing of their senior management, often ran the giant computer all night long. The computer print-outs were in the form of maps of the areas (12,300 sq. mi.) covered by the satellite images and tapes. The occurrences of minerals were located on the maps by capital letters "A" or "B", then colored by hand. A wide variety of ores was searched for.

I. Field Exploration to verify by ground-truth the computer results was arranged early in 1980 with E. & B. EXPLORATIONS LTD. and with ASAMERA.

Governments hired ALL the helicopters to fight forest fires and it was August before transport became available. Further, hard-rock geologists trained in uranium and other minerals were hard to find and free-up to inspect the ground in N.E. Alberta.

The uranium is in granite, not sandstone (Athabasca) as at Cluff Lake.

Rock samples brought back by the field crews indicated that porous

syenite like Gunnar's, existed in N.E. Alberta.

Before sending the crews into the field, they were equipped with marked maps printed out by the computer, briefed on the GSC uranium reconnaissance and also on LANDSAT imagery.

Their reports were late but did not discover any large uranium deposits.

J. SMALL NARROWED WINDOWS FOR SUITABLE EXPLORATION

No field exploration is possible in winter, say from Oct. to May. The uncertainty of 5 departments, Environment, etc. cancelling portions of the permits was not cleared up til October. Even so, Petro-Canada could explore in October because late snowfall was experienced.

In 1980 the absence of helicopters available delayed entry into the field. Farmers' Chemical Ltd. approached 42 companies supposedly interested in uranium exploration and only found 2 willing to look in the field. The terms imposed by the Dept. of Minersls Agreements were too onerous for most especially after the Three Mile nuclear accident when interest waned sharply.

Many companies did not have the geologists with uranium experience to send into the field. Money could not be raised for Farmers' Chemical Ltd. to explore themselves with their own hard-rock two geologists who had an interest in the project.

K. INFORMATION PRESENTED PERSONALLY

Farmers' Chemical Ltd. kept the Director of Mineral Agreements, Mr. Ralph Gilmore, P. Eng. continuously advised

- showing computer-print-out maps
- comparing maps of radio-active occurrences with computed-maps, which checked closely on the Crackingstone Peninsula, in Saskatchewan
- showing LIGHT-SCAN methods
- a letter-report of the methods used
- illustrating features on air photos and mosaics
- reviewing previous exploration reports from the Alta. Research Council

WATER SAMPLES:

OT.: >OINT	CLASS (antilog)		TOTAL	% Freq.	Cum % Freq
C[redacted]	<.1 12	9	9 9	14.06	14.06
1 18	.1 12 - .1 25				
1.33	.1 25 - .1 41				
1 49	.1 41 - .1 58				
1 67	.1 58 - .1 77				
1 88	.1 77 - .1 99				
2 11	.1 99 - .2 23				
.2.37	.2 23 - .2 51				
.2 66	.2 51 - .2 81				
.2 98	.2 81 - .3.16	10	10 19	15.62	29.68
.3 35	.3 16 - .3 54				
3.76	.3 54 - .3 98				
4 22	.3 98 - .4 46				
.4 73	.4 46 - .5 01				
.5 31	.5 01 - .5 62				
5 96	.5 62 - .6 30	13	13 32	20.31	50.00
.6 68	.6 30 - .7 07	3	3 35	4.68	54.46
.7 50	.7 07 - .7 94				
.8 42	.7 94 - .8 91	4	4 39	4.68	60.93
.9 45	.8 91 - 1.0 00				
10 61	10.0 - 11 22	12	12 51	18.75	79.68
11 90	11 22 12 58				
13 35	12 58 - 14.12	3	3 54	4.68	84.37
14 98	14 12 - 15.84				
16 81	15.84 - 17 78	5	5 59	7.81	92.18
18 86	17 78 - 19 95	1	1 60	1.56	93.37
21 16	19 95 - 22 38	3	3 63	4.68	98.43
23[redacted]	22 38 - 25 11				
26 67	25 11 - 28 18				
29 90	28 18 - 31 62				
2.985	2.81 - 3.16				
3.350	3.16 - 3.54				
3.760	3.54 - 3.98				
4.220	3.98 - 4.46				
4.735	4.46 - 5.01				
5.[redacted]	5.01 - 5.62				100%
5.960	5.62 - 6.30	1	1 64	1.56	

64

E & B Explorations Ltd.

#2900, 300 - 5th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 3C4
TELEPHONE (403) 232-1695
TELEX 03-826838

October 24, 1980

Edward L. Jones
Farmers Chemical Ltd.
244 Wildwood Dr. S.W.
Calgary, Alberta
T3C 3E1

To whom it may concern:

A field examination of the Quartz Mineral permits held by Farmers Chemical Ltd. was undertaken by E & B Explorations Ltd. on August 11 and 12, 1980.

The field work consisted of general prospecting and radiometric checking with a spectrometer of airborne radiometric anomalies.

The following is a statement of expenditures incurred by E & B Explorations Ltd. on behalf of Farmers Chemical Ltd.

Office preparation -	
Project geologist 3 days @ $120/day	$360.00
Field examination -	
Project geologist 2 days @ $120/day	240.00
Helicopter support (4 hours daily minimum)	
8 hours @ $456.25/hour	3,650.02
Assaying charges (Chemical Labs)	
24 samples @ $3.13/sample	75.20
Miscellaneous expenses	
(Airfare, hotel, meals etc.)	474.00
	$4,799.22

Respectfully submitted
E & B EXPLORATIONS LTD.

[redacted]

RW/kj
cc: A. Gallop

Robert Ward,
Project Geologist

17.5 hours @ $450.- $7,875.-

Lotus Canada

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NAME: [illegible] Petroleum [illegible]
[illegible] Dept
P.O. Box [illegible] Calgary Alberta [illegible]

DATE	A/C	REG.	CASH	P.O. NO.	BASE
[illegible]	[illegible]	C-GMIG		[illegible]	Ft Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Ft Smith	[illegible]			3.3			
	Ft Chip						
	[illegible]						

[redacted]

[illegible]

REMARKS: Buffalo Airways Ltd.

INCIDENTALS:

TOTAL

AUTHORIZED BY:

PILOT [illegible signature]

№ 16605

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NAME: Pacific Petroleums Ltd Attn: [illegible]
Mining Department
P.O. Box 6666 Calgary Alberta T2P 2T2

DATE	A/C	REG.	CASH	P.O. NO.	BASE
Sept [illegible]	206B	C-GMIC		[illegible]	Ft Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Ft Smith	[illegible] Lake Area			4.5			
	[illegible] Lake Area						
	Return						
	[redacted]						
	[illegible] Project						

REMARKS: Buffalo Airways Ltd

INCIDENTALS:

TOTAL

AUTHORIZED BY:

PILOT Larry [illegible]

№ 16604

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NAME: Pacific Petroleums Ltd (Attn. J.V. Wright
Mining Department
P.O Box 6666 Calgary Alberta T2P 0T6

DATE	A/C	REG.	CASH	P.O. NO.	BASE
Sept 13/79	206B	C-GMIG	✓	A-151545	Fort Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Fort Smith	Ruin Lake Area			4.1			
	Water Survey ✓						
	& Traversing ✓						
	Return ✓						
	[redacted]						
	Carbe Project						

REMARKS: Buffalo Airways fuel

INCIDENTALS:

TOTAL

AUTHORIZED BY:

PILOT Larry Mayo

№ 16603

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NAME: Pacific Petroleums Ltd Attn: J. W. Wright
Mining Dept
P.O. Box 6666 Calgary Alberta T2P 3T6

DATE	A/C	REG.	CASH	P.O. NO.	BASE
Sept 18/79	206B	C-GMIG		A151545	Ft Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Ft Smith	Maurice Lake			3.2			
	Rene Lake						
	Return						

[redacted]

[illegible signature]

REMARKS: Buffalo Airways Fuel

INCIDENTALS:

TOTAL

AUTHORIZED BY:

PILOT Larry Moyse.

№ 16607

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NA[redacted] Pacific Petroleums Ltd Attn. J. Wright
Mining Dept
P.O. Box 6666 Calgary Alberta T2P 2L6

DATE	A/C	REG.	CASH	P.O. NO.	BASE
Sept 4/79	206B	C-GMIG.		A151845	Ft Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Ft Smith	Pine Lake			2.4			
	Cross Return						

[redacted]

R[redacted]ARKS: Buffalo Airways Fuel

INCIDENTALS:

TOTAL

AUTHORIZED BY:

PILOT Larry Myers.

№ 16606

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT Athabasca Basin

DATE Sept 13/78

LOCALITY Ft. Smith Area, NWT

PLOTTED AIR PHOTO

MAP 74M/3

SAMPLER G. Sauvé, J. Reid

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6	7 8	9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	D
1					1							10			K					8	2	2								
2					2							~~15~~																		
3					2							15			K					8	2	2								
4					3							15			K					8	3	2								
5					4							~~15~~ 5			K					6	4	2								
6					5							3			K					5	5	1								
7					6							5			K				3	3	4	3								
8					7							4			B				2	5	3	2								
9					8							~~20~~ 15			B				1	7	2	1								
10																														

K Black

B Brown

G Grey

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT Athabasca

DATE Sept. 15/77

LOCALITY Ft. Smith

PLOTTED AIR PHOTO

MAP 74 M/14, 11

SAMPLER G.S.C. J.R.

DEPTH FEET

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6 7	8	9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	
1				9	L							3.								9	1	3						6.0		+ water
2				10	L							10										3						5.7		
3				11								25								9		2						5.7		
4				12								15																6.0		
5				13								6					K					2						6.0		
6				14								8					B											6.0		
7				15								10					B											5.7		
8				16								20					B											5.7		
9				17								20																5.7		
10				18								15																6.0		

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT _____ PLOTTED AIR PHOTO _____

DATE _____ MAP _____

LOCALITY _____ SAMPLER _____

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIMT (FGET)	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6 7 8		9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	
1				19	L	L						30			B													57		
2				20								55			G				19									60		
3				21								32								9								57		
4				22								52																56		
5				23								3																57		
6				24								15								17								60		
7				25								14							9	12								57		
8				26								15																57		
9				27								15								11								57		
10				28								18								1								56		
				29								8																5.7		

5269 / Apr. 78

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT _____ PLOTTED AIR PHOTO _____

DATE _____ MAP _____

LOCALITY _____ SAMPLER _____

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6 7	8	9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	
1												15																56		
2												15																56		
3												20								T								57		
4												20																57		
5												50																56		
6												10			G					19								56		
7												10			P					91								57		
8												50								28								58		
9												20			G					19								1		Not To Sample
10												10			G					19								57		

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT _____ PLOTTED AIR PHOTO _____

DATE Sept. 15/73 MAP _____

LOCALITY _____ SAMPLER _____

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	TEST DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6 7	8	9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39 40		41	42 43	44	45	46	47	48 49	50	
1				4 8								4			B		1			9		2						5 6		Colin Lake
2				4 1								4			B		1			9								5 8		
3				4 2								15			B					4 6								5 6		lite
4				4 3								10			B					6 4		1						6 0		lite
5				4 4								5			B					9 1		2						5 7		lite
6				4 5								4			B					9 1		1						5 9		
7				4 6								10			B					9 1		2						5 7		
8				4 7								5			B					9 1		1						5 8		
9				4 8								5			B					8 2		1						5 7		
10				4 9																								5 6		Just water No silt

5269 / Apr. 78

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT _____ PLOTTED AIR PHOTO _____

DATE _____ MAP _____

LOCALITY _____ SAMPLER _____

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6	7 8	9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	
1					50							5					B			8	21							60		
2					51							10					B			9	12							59		
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														

5269 / Apr. 78

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT _____ PLOTTED AIR PHOTO _____

DATE Sept. 16/79 MAP 74 M/2,3,7,8

LOCALITY Ryan Lakes SAMPLER GSS, JR.

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6 7	8	9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	
1				52								5			B				18	1	2							57		
2				53								10			B				16	3	-							56		
3				54								15			B				17	2	-							56		
4				55								30			B				18	1	-							56		
5				56								20			G				19	-								57		
6				57								25			B				91									57		Water & silt ≠ spott Jelly (
7				58								10			B				91									58		Jelly
8																														
9																														
10																														

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT Athabasca Basin.
DATE Sept. 17/79
LOCALITY Fort Smith
PLOTTED AIR PHOTO
MAP 74M/3, 2, 7
SAMPLER GSS, JR.

	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
1	59	L							15			G					1	9									+water @ same site (1'N=)
2	60								40			G					1	9									
3	61								4			B				3	4	3	1								
4	62								30			B				2	7	1									
5	63								15			B				2	7	1	1								
6	64								10			B				2	7	1	3								
7	65								15			B				1	9		2								
8	66								45			B				1	9		1								Jelly
9	67								25			B				1	9		1								"
10	68																										

5269 / Apr. 78

PACIFIC PETROLEUMS LTD.
GEOCHEMICAL DATA SHEET

PROJECT _____ PLOTTED AIR PHOTO _____

DATE _____ MAP _____

LOCALITY 68L SAMPLER _____

	YR	PC	SC	NUM	ST	Z	EAST	NORTH	TS	RK	ORGN	DIM	VEL	HZ	COL	PPT	FLT	GVL	SND	SLT	CLY	ORG	SLP	DIP	CONT	MIN	ALT	PH	DUP	REMARKS
	1	2	3	4 5 6 7 8		9 10	11 12 13 14 15	16 17 18 19 20 21	22	23 24	25 26 27	28 29 30	31	32 33	34	35	36	37	38	39	40	41	42 43	44	45	46	47	48 49	50	
1				69							10		E		B					19		2								On Mercuddi Lakes
																													on Map 74M (1:250000)
2				70							3				B					17		1							Jelly. Mercuddi Lakes
3		-		71							15				B					91		-							Jelly " "
4				72							8				B					91									To ~ 4000 T/C (Background 2000 ft)
																													Jelly. Mercuddi Lakes
5				73							15				B					91									Jelly " "
6				74L																									Ryan Lakes
7																													
8																													
9																													
10																													

5269/-Apr. 78

To: PACIFIC PETROLEUMS
MINING DEPARTMENT
P.O. Box 6666
Calgary, Alberta T2P 6T6
ATTN: Joe Wright

File No. 17822
Date September 26, 1979
Samples Water
P.O. # A151544

RECEIVED
MINING
OCT 15 1979

Certificate of ASSAY
LORING LABORATORIES LTD.

SAMPLE No.	PPB U308	pH
"WATER SAMPLES"	W : water L : Sediments.	
9AS 09W	Nil	7.90
10W	Nil	7.40
11W	0.7	7.40
9KS 12W	0.3	7.35
13W	0.7	7.45
14W	1.0	7.70
15W	0.3	7.40
16W	Nil	7.35
17W	0.3	7.30
18W	1.3	7.30
19W	0.3	7.70
20W	0.7	7.75
21W	0.3	7.70
22W	2.0	7.30
23W	1.7	7.60
24W	2.0	7.55
25W	Nil	7.60
26W	Nil	7.90
27W	Nil	7.60
28W	Nil	7.90
29W	0.3	7.90
30W	1.7	7.50
31W	0.3	7.40
32W	Nil	7.50
9AS 33W	1.7	7.10
34W	0.3	7.30
35W	0.3	7.20
36W	0.6	7.30

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]

To: PACIFIC PETROLEUMS
MINING DEPARTMENT
P.O. Box 6666
Calgary, Alberta T2P 6T6
ATTN: Joe Wright

File No. 17822
Date September 26, 1979
Samples Water
P.O. # A151544

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPB U308	pH
9AS 37W	0.6	7.50
39W	0.6	7.55
40W	1.1	7.60
41W	1.1	7.80
42W	1.1	7.90
43W	1.4	7.90
44W	5.8	7.80
9AS 45W	1.7	7.85
46W	1.4	7.80
47W	0.6	7.40
48W	1.7	7.45
49W	0.6	7.50
50W	1.1	7.60
51W	1.9	7.55
52W	0.6	7.40
53W	0.6	7.80
54W	Nil	7.60
55W	1.1	7.80
56W	0.6	7.45
57W	0.3	7.60
58W	0.8	7.20
59W	0.6	7.25
60W	1.1	7.40
61W	0.6	7.30
62W	1.1	7.20
63W	0.8	7.30
64W	2.2	7.10
65W	1.1	7.00
66W	1.1	6.90
67W	1.1	7.20

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

[redacted]

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

To: PACIFIC PETROLEUMS
MINING DEPARTMENT
P.O. Box 6666
Calgary, Alberta T2P 6T6
ATTN: Joe Wright

File No. 17822
Date September 26, 1979
Samples Water
P.O. # A151544

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPB U3O8	pH
9AS 68W	0.6	7.15
69W	1.1	7.30
70W	0.8	7.50
71W	0.6	7.60
72W	0.6	7.90
73W	0.8	7.70

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]

To: PACIFIC PETROLEUMS
MINING DEPARTMENT
P.O. Box 6666
Calgary, Alberta T2P 6T6
ATTN: Joe Wright

File No. 17822
Date September 26, 1979
Samples Soil
P.O. # A151544

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
"SOIL SAMPLES"	
1 L	12.5
2 L	18.5
3 L	17.1
4 L	2.9
5 L	11.1
6 L	8.0
7 L	44.0
8 L	60.0
9 L	4.3
10 L	8.6
11 L	8.8
12 L	12.1
13 L	8.2
14 L	18.9
15 L	2.4
16 L	58.0
17 L	30.0
18 L	36.0
19 L	9.5
20 L	21.0
21 L	54.0
22 L	50.0
23 L	6.8
24 L	70.0
25 L	5.8
26 L	14.4
27 L	11.9
28 L	4.0

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

[redacted]

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

To: PACIFIC PETROLEUMS
MINING DEPARTMENT
P.O. Box 6666
Calgary, Alberta T2P 6T6
ATTN: Joe Wright

File No. 17822
Date September 26, 1979
Samples Soil
P.O. # A151544

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
29 L	7.2
30 L	3.8
31 L	46.0
32 L	104.0
33 L	44.0
34 L	24.0
35 L	26.0
36 L	1.6
37 L	8.0
38 L	4.0
39 L	1.3
40 L	5.4
41 L	68.7 ✓
42 L	4.0
43 L	35.4 ✓
44 L	440.0 ✓
45 L	10.6
46 L	102.0 ✓
47 L	52.1 ✓
48 L	39.6 ✓
50 L	62.5 ✓
51 L	106.0 ✓
52 L	9.5
53 L	41.7
54 L	64.6
55 L	31.2
56 L	2.0
57 L	9.8
58 L	6.6
59 L	2.0

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: PACIFIC PETROLEUMS
MINING DEPARTMENT
P.O. Box 6666
Calgary, Alberta T2P 6T6
ATTN: Joe Wright

File No. 17822
Date September 26, 1979
Samples Soil
P.O. # A151544

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM U308
60 L	1.6
61 L	0.8
62 L	3.2
63 L	47.9
64 L	22.9
65 L	15.4
66 L	150.0
67 L	37.5
39 L	13.1
70 L	5.8
71 L	6.2
72 L	5.4
73 L	5.2

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

SOIL SAMPLES [IV]

PLOT POINT	CLASS (antilog)	soil ppm	TOTAL		% Freq	Cum Freq %	↓
1.560	< 1.12	1 // 1	1	1	1.38	100%	1.38%
1.185	1.122 - 1.25		—				
1.330	1.25 - 1.41	1 // 1	1	2	1.38	98.6	2.77%
1.495	1.41 - 1.58						
1.675	1.58 - 1.77	11 // 2	2	4	2.77	97.2	5.55%
1.880	1.77 - 1.99						
2.110	1.99 - 2.23	11 // 2	2	6	2.77	94.4	8.33
2.370	2.23 - 2.51	1 // 1	1	7	1.38	91.6	9.72
2.660	2.51 - 2.81						
2.985	2.81 - 3.16	1 // 1	1	8	1.38	90.2	11.11
3.350	3.16 - 3.54	1 // 1	1	9	1.38	88.8	12.50
3.760	3.54 - 3.98	1 // 1	1	10	1.38	87.5	13.88
4.220	3.98 - 4.46	1111 // 4	4	14	5.55	86.1	19.44
4.735	4.46 - 5.01						
5.315	5.01 - 5.62	111 // 3	3	17	4.14	80.5	23.61
5.960	5.62 - 6.30	111 // 3	3	20	4.16	76.3	27.77
6.685	6.30 - 7.07	11 // 2	2	22	2.77	72.2	30.55
7.505	7.07 - 7.94	1 // 1	1	23	1.38	69.4	31.99
8.425	7.94 - 8.91	11111 // 5	5	28	6.94	68.0	38.88
9.455	8.91 - 10.00	111 // 3	3	31	4.16	61.1	43.05
10.610	10.0 - 11.22	11 // 2	2	33	2.77	56.9	45.83
11.900	11.22 12.58	11 // 3	3	36	4.16	54.1	50.00
13.350	12.58 - 14.12	11 // 2	2	38	2.77	50.0	52.77
14.980	14.12 - 15.84	/ 1	1	39	1.38	47.2	54.16
16.810	15.84 - 17.78	/ 1	1	40	1.38	45.8	55.55
18.865	17.78 - 19.95	11 // 2	2	42	2.77	44.4	58.33
21.165	19.95 - 22.38	/ 1	1	43	1.38	41.6	59.72
23.745	22.38 - 25.11	11 // 2	2	45	2.77	40.2	62.50
26.645	25.11 - 28.18	/ 1	1	46	1.38	38.8	63.88
29.900	28.18 - 31.62	11 // 2	2	48	2.77	36.1	66.66

[2]

PLOT POINT	Class		TOTAL	% Freq	Cum Freq	Cum Freq %
33.550	31.62-35.48	1 // 2	2	2.77	33.3	69.
37.645	35.48-39.81	III // 3	3	4.16	30.5	73.
42.235	39.81-44.66	III // 3	3	4.16	26.3	77.
47.385	44.66-50.11	III // 3	3	4.16	22.2	81.9
53.170	50.11-56.23	II // 2	2	2.77	18.0	84.7
59.660	56.23-63.09	III // 3	3	4.16	15.2	88.8
66.940	63.09-70.79	III // 3	3	4.16	11.1	93.1
75.110	70.79-79.43					
84.275	79.43-89.12					
94.560	89.12-100.00					
106.100	100.00-112.20	III // 3	3	4.16	6.9	97.2
119.045	112.20-125.89					
133.570	125.89-141.25					
149.865	141.25-158.48	/ 1	1	1.38	2.77	98.6
168.150	158.48-177.82					
188.670	177.82-199.52					
211.695	199.52-223.87					
237.525	223.87-251.18					
266.505	251.18-281.83					
299.025	281.83-316.22					
335.515	316.22-354.81					
376.455	354.81-398.10					
422.39	398.10-446.68	/ 1	1	1.38	1.38	100%
473.93	446.68-501.18					
	501.18-562.34					

72 singles.

CHEMEX

CALGARY 2021 - 41 AVE. N.E. CALGARY, CANADA T2E 6P2
TELEPHONE (403) 276-9627 TELEX 038-25541
EDMONTON 6112 DAVIES ROAD, EDMONTON, CANADA T6E 4M9
TELEPHONE (403) 465-9877 TELEX 037-41596

CERTIFICATE OF ANALYSIS

• MINERAL • GAS • WATER • OIL • SOILS • VEGETATION • ENVIRONMENTAL ANALYSIS

E & B Explorations Ltd.

DATE Aug. 28/80

PROJECT NO. 9477-1-1181

LOCATION	Mo ppm	U ppm	Th ppm
14001	<1	<0.5	16
14002	<1	<0.5	6
14003	<1	4.0	7
14004	<1	<0.5	32
14005	6	<0.5	9
14006	<1	<0.5	5
14007	<1	<0.5	6
14008	1	11.0	1250

CTA MEMBER CANADIAN TESTING ASSOCIATION

Certified by .....

Buffalo
AIRWAYS LTD.
BOX 168, FORT SMITH, N.W.T.
X0E 0P0
TELEPHONES:
FORT SMITH 872-2216
FORT SIMPSON 695-2404
TELEX 034-4819
FIXED WING AND HELICOPTERS

№ 5779

August 15 19 80

RECEIVED AUG 26 1980

E & B Exploration Ltd.,
2900 - 300 5th Avenue S.W.,
Calgary, Alberta.

DESCRIPTION		AMOUNT
August 11, 1980 Charter Ticket #19205		
Hughes 500D C-GVTR Pilot: Barr		
Ft. Smith-East of Smith-Tulip Lake Area-Ft. Smith		
Flying: Daily Minimum Applies 4.0 hours @ $425.00/hour	1,700.00	
Fuel: 67.2 gallons @ $1.6/gallon	107.52	
Oil: 2.4 hours @ $1.50/hour	3.60	
August 12, 1980 Charter Ticket #19206		
Hughes 500D C-GVTR Pilot: Barr		
Ft. Smith-Bower Lake Area-Ryan Lake Area Tulip Lake Area-Ft. Smith		
Flying: Daily Minimum Applies 4.0 hours @ $425.00/hour	1,700.00	
Fuel: 84.0 gallons @ $1.60/gallon	134.40	
Oil: 3 hours @ $1.50/hour	4.50	
		$3,650.02

APPROVED BY: [redacted]

PROJECT: Pre-Survey

CODE: 9001

INVOICE

BUFFALO AIRWAYS LTD. BOX 168. FORT SMITH. N.W.T.

INTEREST AT 2% PER MONTH CHARGED ON OVERDUE ACCOUNTS

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NAME: E + B Exploration ltd
9700 - 300 5th Ave SW
Calgary, Alberta

DATE	A/C	REG.	CASH	P.O. NO.	BASE
April 11/85	Navajo	VTR			Ft Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Ft Smith	East of Smith			2.5			
	Tallyho Lake area						
(Daily minimum applies)				11.0		435a	1700.00
Ft Smith							

REMARKS: Pilots and supplies to & from Buffalo
Casual

FUEL	672 gallons @ 160	107.52
OIL	2.4 hrs @ 1.50	3.60
EXPENSES		
EXCISE TAX		
TOTAL		1811.12

AUTHORIZED BY: [redacted]

PILOT [redacted]

№ 19205

Buffalo AIRWAYS LTD.

BOX 168 FORT SMITH, N.W.T. X0E 0P0

CHARTER TICKET

NAME: F + B Exploration Ltd
900 300 5th ave S.W.
Calgary Alberta

DATE	A/C	REG.	CASH	P.O. NO.	BASE
Aug 12 80	Hughes 500	UTR			Ft Smith

FROM	TO	UP	DOWN	HRS.	MILES	RATE	
Ft Smith	Bowen Lake area						
	Ryan lake area 3.0						
	Phillips lake area						
(Daily minimum							
supply)				4.0		425.00	1700.00

REMARKS: fuel & oil supplied by Buffalo

FUEL 84 gallons @ 1.60	134.40
OIL 3.0 hrs @ 1.50	4.50
EXPENSES	
EXCISE TAX	
TOTAL	1838.90

AUTHORIZED BY: [redacted]

PILOT [redacted]

№ 19206

CHEMEX

LABS (ALBERTA) LTD.
ANALYTICAL AND CONSULTING CHEMISTS

INVOICE

C 13705

Send cheque to:
2021 - 41 Ave. N.E.
Calgary, Alberta Canada T2E 6P2
TELEPHONE: 403-276-9627
TELEX: 038-25541

E&B Explorations Ltd.
2900 Cascade Bldg.
300 - 5 Ave. S.W.
Calgary, Alberta T2P 3C4

ATTN. Bob Ward

DATE Aug. 28/80

PROJECT 9477-1-1121

YOUR REF:

P.O. NO.

ITEM #	QUANTITY	DESCRIPTION	PRICE PER UNIT	PRODUCT CODE	TOTAL
1.	8	Rock geochem samples for U	$2.75	1 2 330	$22.00
2.	8	Rock geochem samples for Th	$5.00	1 2 330	40.00
3.	8	Rock geochem samples for Mo	$1.65	1 2 330	13.20
					$75.20

O.K. [illegible]

AJ.K.

TERMS - NET CASH
Chemex reserves the right to charge interest on overdue accounts at 2% per month (24% per annum).

CUSTOMER'S COPY

Form # 001 R6/80 NLD

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

GEOPHYSICAL SERIES (AIRBORNE GAMMA-RAY SPECTROMETRIC)

EQUIVALENT URANIUM ppm (eU) 74 M

AIRBORNE GAMMA-RAY SPECTROMETRIC MAP

Airborne gamma-ray spectrometry data collected in Northeastern Alberta during the summers of 1970 and 1977, are presented:

(1) as contour maps of the integral count, the potassium, equivalent uranium and equivalent thorium concentrations, and the eU/eTh, eU/K and eTh/K ratios; and

(2) as stacked profiles of the seven radiometric parameters plotted for each of the 23 flight lines.

The airborne measurements were made using the high sensitivity G.S.C. spectrometer with detector volume of 50,000 ml, flown at a mean terrain clearance of 122 metres and 190 km/hr. East-west flight lines were at 5 km line spacing, and the numbered flight lines are plotted on each of the contour maps.

Potassium is measured directly from the 1.46 MeV gamma-ray photons emitted by potassium-40, whereas uranium and thorium are measured indirectly from gamma-ray photons emitted by daughter products in their decay chains. Uranium is monitored by means of gamma-ray photons at 1.76 MeV from bismuth-214, and thorium, from 2.62 MeV photons emitted by thallium-208. The energy windows used are as follows:

Total Count		0.41-2.81 MeV
Potassium	K-40	1.37-1.57 MeV
Uranium	Bi-214	1.66-1.86 MeV
Thorium	Tl-208	2.41-2.81 MeV

Uranium, thorium and potassium counts were measured over 2.5-second intervals; integral counts over 0.5-second intervals. The data have been corrected for background, height variation and spectral scattering. The computer programs used to produce the contour maps and profiles are described by R.L. Grasty, 1972 "Airborne Gamma Spectrometry Data Processing Manual", G.S.C. Open File No. 109.

The values for the radioelement concentrations shown on the contour maps are "average surface concentrations", that is, an average of the area on the ground viewed by the spectrometer, an area which may contain varying amounts of outcrop, overburden and surface waters. As a result the concentrations as shown on the contoured maps are usually considerably lower than the concentrations in the bedrock. However, the radioelement distribution pattern shown by the contour maps reflects the distribution of the elements in the bedrock.

Factors for converting airborne measurements to element concentration were determined by relating the corrected airborne count rates over test strips in the Ottawa area to the known ground radioelement concentrations (R.L. Grasty, and B.W. Charbonneau, 1974, Gamma-Ray Spectrometer Calibration Facilities, G.S.C. Paper 74-1B, pp. 69-71).

The conversion factors used are approximately those listed below.

Total Count	1 ur	= 170 c.p.s.
	1%K	83 c.p.s.
	1 ppm eU	= 9 c.p.s.
	1 ppm eTh	= 7 c.p.s.

Total count measurements are presented as units of radioelement concentration (ur), as defined in International Atomic Energy Agency Technical Report Series No. 174.

In order to produce the contour maps, data along the flight lines were averaged over seventeen 2.5-second counting intervals (approximately 2.2 km) and the effect of background count rates over the lakes was removed. This degree of averaging or smoothing is selected in order to:

(i) keep the smoothing to a minimum, i.e. have the smoothed values as close as possible to the original unsmoothed data, yet

(ii) use sufficient smoothing to utilize all data along flight lines between grid points while making the contouring grid dimension along the flight lines as close as possible to the spacing between flight lines.

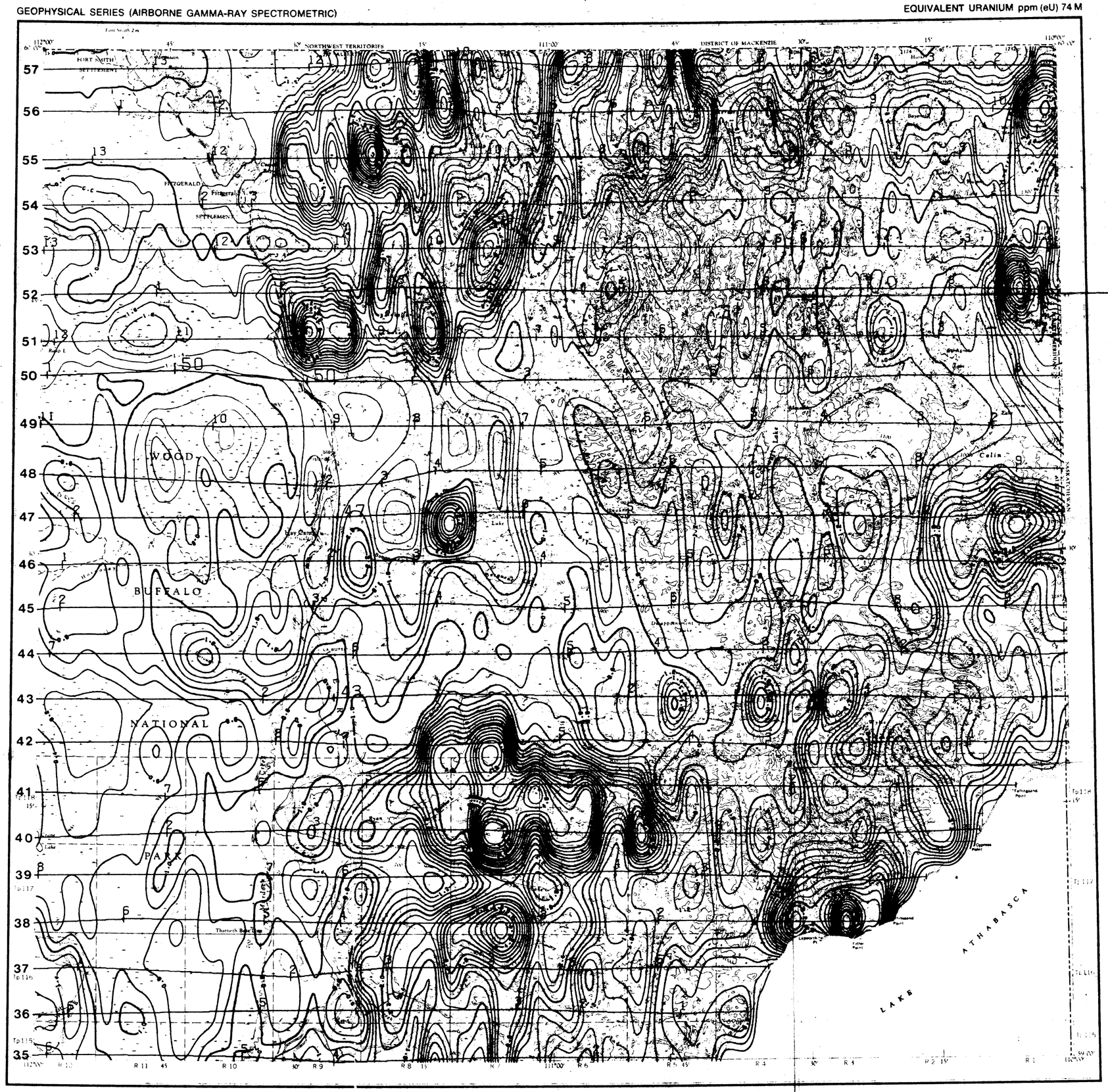
Compromise between (i) and (ii) results in a rectangular grid (approximately 5 km N-S and 2 km E-W) of data used for contouring. As a result of these compilation procedures, contours in some cases may be distorted in the direction perpendicular to the flight lines. This sort of imperfection is difficult to avoid in contouring data on widely spaced flight lines. It does not detract from the value of the map as the product of a reconnaissance survey, indicating the regional radioelement distribution pattern, but one should not attempt to use these contour maps for the precise location of exploration targets. More accurate locations of anomalies can be made using the data on the profiles.

This project was carried out according to the standard specifications of the Federal-Provincial Uranium Reconnaissance Program.

Airborne Gamma-Ray Spectrometry Survey 1970 & 1977
by
Resource Geophysics & Geochemistry Division
Geological Survey of Canada

Base map material supplied by Surveys and Mapping Branch

Cartography by Geological Survey of Canada



EQUIVALENT URANIUM ppm

FITZGERALD

ALBERTA

WEST OF FOURTH MERIDIAN - OUEST DU QUATRIÈME MÉRIDIEN

MAP 36374 G

Scale 1:250,000 Echelle

ID 19810002
U-AF-172(3)
#2

Permit Map

N O R T H W E S T T E R R I T O R I E S

R.11 R.10 R.9 R.8 R.7 R.6 R.5 R.4 R.3 R.2 R.1 W.4 M.

TP.126 TP.125 TP.124 TP.123 TP.122 TP.121 TP.120 TP.119 TP.118 TP.117 TP.116 TP.115 TP.114

6878020002

6878020001

TETHUL RIVER

DONOVAN L.K.

6879070009
79-202

6879070011
79-205

TULIP LK.

LELAND L.K.

FITZGERALD S.MT.

FITZGERALD

DOG RIVER

6879070008
79-201

79-204

6879070010

McLELLAND L.K.

112

SLAVE RIVER

1199 1201 1140 1139 1137 1136 1198 MERCREDI L.K.

BAYONET L.K.

ANDREW L.K.

ASHTON L.K.

CHARLES LK.

2878070000

JOHNSON L.K.

POTTS L.K.

WEEKES L.K.

ST. AGNES L.K.

ALEXANDER L.K.

CORNWALL LK.

COLIN LK.

HOOKER LK.

COCKSCOMB LK.

WOODMAN LK.

BOCQUENE RIVER

BOCQUENE L.K.

79-197
6879070004

RODERICK L.K.

BELYEA L.K.

LA BUTTE CREEK

TURTLE LK.

PERMIT 244

6879070003
79-194

6879040001
79-128

6879040002
79-129

79-200

6879070005
79-198

6879070001
79-192

6879070007

RYAN LK.

6879070006
79-199

79-193

6879070002

6879030005
79-40

BURSTALL L.K.

WYLIE LK.

2878020001

BRYANT L.K.

FLORENCE L.K.

WINNIFRED L.K.

2878020002

377 378 375 376

382 373 381 380 379

MURDOCK CREEK

SLAVE RIVER

CHANNEL

SCOW

PEACE RIVER

LOUTIT L.K.

1183 1184 1182 1185 1174 1175 1178 1179 1181 1180 1177 1176 1170 1171 1173 1172 1169

APP
140332

2878020003

2878020004

FLETT L.K.

COUPE

ATHABASCA

PERMIT 220

PERMIT 219

ID 19810002
U-AF-172(3)
#1

19810002

P = Posted Land

QUARTZ MINERAL CLAIMS

1198 HAROLD VINCENT HARVEY
1199, 1201 WILMA ANNE HARVEY
1169 - 1197 GODFREY JOHN WALTON
373, 375-378 JAMES WILLIAM PRICE
379-382 ENEX RESOURCES LIMITED (N.P.L.)
383-1103 FLIN FLON MINES LTD.
1118-1129 FLIN FLON MINES LTD.
1136 FLIN FLON MINES LTD.

QUARTZ MINERAL EXPLORATION PERMIT

235,236, 246 IMPERIAL OIL LIMITED
6877010001 IMPERIAL OIL LIMITED
140332 FLIN FLON MINES LTD.
219-225,240 FLIN FLON MINES LTD.
244 C.S.E EXPLORATIONS and PACIFIC PETROLEUMS LTD.
6878020001 6878020002 MARLINE OIL (ALBERTA) LTD.
6879030004 COMAPLEX RESOURCES INTERNATIONAL
79-40, 79-197 to 79-202, 204, 205 FARMERS' CHEMICAL LTD.

...L LEASE
...RTH CANADIAN OILS LIMITED
...ABASCA EXPLORATION & MINING LTD.
...TOR EXPLORATIONS LTD
...UMBIAN NORTHLAND EXPLORATION LTD
...070001 AQUARIUS RESOURCES LTD.
...020001, 2878020002, 2878020003 & ...1020004
...ERZ EXPLORATION AND MINING LIMITED and ...ON RESOURCES LIMITED and MINING CO. LTD.

Map to accompany bulletin. 1

MAP 25

AERIAL PHOTOGRAPHIC INTERPRETATION OF PRECAMBRIAN STRUCTURES NORTH OF LAKE ATHABASCA

ALBERTA

WEST OF FOURTH MERIDIAN

Scale 1 Inch to 2 Miles.

2 1 0 2 4 6 8 10

#3

ID-19810002

U-AF-172(3)

#3

Published in 1958.

THE DECLINATION OF THE COMPASS NEEDLE 1954.

LEGEND

STRUCTURAL FEATURES

- Fault, major - regional
- Fault, minor
- Fault or strong fracture
- Fracture, minor - mainly tension
- Fracture, minor - irregular orientation
- Fracture, minor - closely spaced
- Shear zone
- Folded sedimentary or metamorphic structures

SURFICIAL FEATURES

- Sand dunes
- Glacial flutings
- ANOMALOUS AREAS (OWNER DEFINED)
- ANOMALOUS AREAS (AIRBORNE SPECTROMETER)

Aerial photographic interpretation by J. D. Godfrey.

REFERENCE

- Secondary road
- Boundary, provincial
- Boundary, park, game preservation
- Boundary, township, surveyed
- Boundary, township, unsurveyed
- Boundary, settlement
- Lake and stream, permanent
- Lake and stream, intermittent
- Rapids

Cartography taken from Department of Lands and Forests, Alberta, Aerial Survey Sheets No. 74M. and north half of 74L—1951.

Magnetic declination taken from Canada Sheets No. 74M. and north half of 74L, National Topographic Series, Department of Mines and Technical Surveys, Canada—1955.

AB10002