GEOLOGICAL REPORT
ON THE
CLARK PROPERTY, BRENT LAKE, B.C.
CLARK 1, 2 AND 3 MINERAL CLAIMS
OSOYOOS MINING DIVISION
Lat. 49° 30' N; Long. 119° 45' W
N.T.S. Map-Sheet 82E/5W

for

British Newfoundland Exploration Ltd.

by

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

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

28 February, 1979

7185

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MAPS

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GEOLOGICAL REPORT ON THE CLARK PROPERTY, BRENT LAKE, B.C.

INTRODUCTION

This report describes the results of geological mapping completed in the vicinity of the CLARK property during May, 1978. Work was follow-up to reconnaissance geochemical and geological surveys in 1977. Some of the mapping was done on ground located east of the claim group proper. The reason for this is that stratigraphic relationships are best observed in Farleigh Creek Valley.

Work on the CLARK property during 1978 benefited from discussions with personnel of Pacific Petroleum Ltd. and with Dr. B.N. Church of the B.C. Ministry of Mines & Petroleum Resources, both of whom were active in the area.

Conclusions set forth in this report are based on the work cited above.

CONCLUSIONS AND RECOMMENDATIONS

1. CLARK geology features an arkose and conglomerate unit laid down on granitic basement and overlain first by a light-coloured complex of rhyolitic rocks and then by a dark series of phonolite flows. Later block faulting complicated the geology.

2. A band of tuff and volcanic sandstone occurs in the lowest part of the phonolite sequence. A channel developed here causes a thickening of this unit and introduction of coarse tuffs, grit, arkose and conglomerate beds.

3. The upper parts of this channel have been affected by an oxidizing hydrothermal solution rich in uranium and thorium. The result has been a light red alteration of the beds and impregnation by up to 100 ppm uranium and several hundred ppm thorium.

4. The channels are not of economic grade in themselves, but no great increase in uranium concentration would be needed to produce a viable deposit. Associated coal might produce such a concentrating mechanism.

5. Virtually all of the channel outcrops occur east of the CLARK property while most of any continuation will be on these claims.

6. A narrow seam of coal containing 1% uranium was discovered in a road-cut on Northern CLARK property. It occurs in an arkosic part of the basal (Springbrook) conglomerates.

7. The area surrounding the radioactive coal seam should be mapped in detail and carefully prospected. Also, a drill hole test is recommended to investigate radioactivity at the (unexposed) phonotite-rhyolite contact observed at several localities.

Respectfully submitted,

Dick Culbert

28 February, 1979

R.R. Culbert, Ph.D., P.Eng.

GENERAL DESCRIPTIONS

Location and Access

The CLARK property is located in the south central portion of British Columbia about 25 kilometers west of Penticton. The claims are readily reached via the Apex Mountain road. There is a good all weather surface as far as Farleigh Lake. Beyond that a network of new logging roads criss-crosses most of the claimed area.

History

The CLARK property was staked to cover geochemical anomalies in uranium identified from regional surveys carried out in 1976-77. Follow-up reconnaissance and geological and geochemical work in 1977 verified the anomalies and defined radioactive zones.

Pacific Petroleum Ltd. staked the ASTRO-45 claim east of CLARK-1 in 1977. Field work included radiometric surveys and geological mapping plus one diamond drill hole.

Dr. B.N. Church did reconnaissance geological work in the area during the 1977 field season on behalf of the B.C. Ministry of Mines & Petroleum Resources.

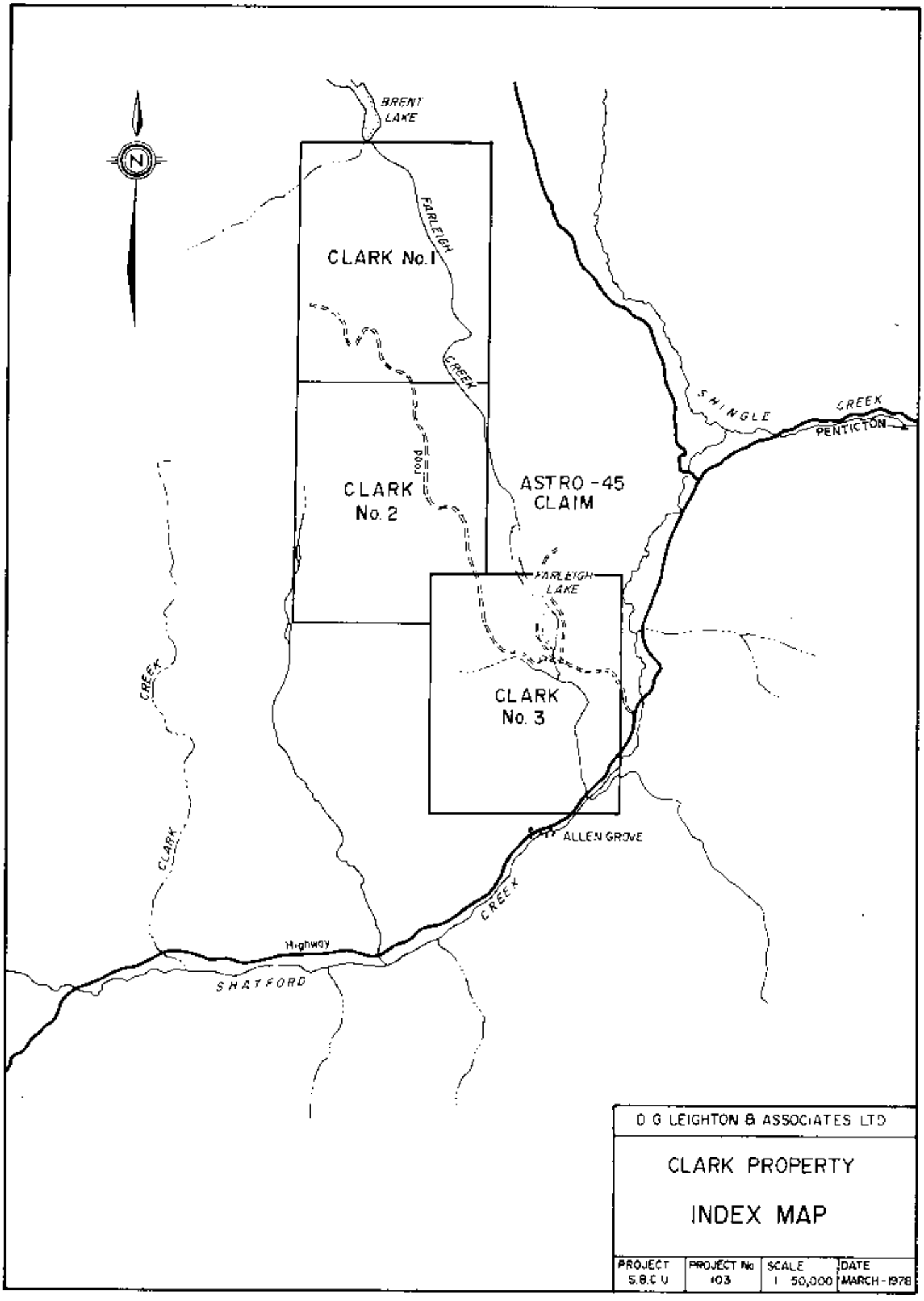
Occidental Petroleum staked claims south and west of the CLARK group in the fall of 1978. Unfortunately, these were also named CLARK claims.

Claims

The CLARK property consists of the following claims held in the name of British Newfoundland Exploration Ltd.:

Claim	Units	Record No.	Record Date	Expiry Date
CLARK-1	20	196	14 Feb., 1977	14 Feb., 1978
CLARK-2	20	262	12 April, 1977	12 April, 1978
CLARK-3	16	263	12 April, 1977	12 April, 1978
CLARK-4 *	20	430	30 May, 1978	30 May, 1979

* in contravention with ASTRO-45 claim.



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CLARK PROPERTY

INDEX MAP

PROJECT	PROJECT No	SCALE	DATE
S.B.C.U.	103	1 : 50,000	MARCH - 1978

GENERAL

The Farleigh Lake area is underlain by an assemblage of Eocene volcanic and sedimentary rocks which in turn overlie a Mesozoic intrusive basement complex. The unconformity is marked by a variably developed sequence, mainly conglomerate, referred to as the Springbrook Formation.

Three CLARK claims located west and south of Farleigh Lake on the basis of uranium geochemical anomalies were mapped in moderate detail to establish stratigraphic relationships. These are best seen in the steep slopes of Farleigh Creek Valley. Mapping was facilitated by the establishment of grid lines across key areas.

GEOLOGY

Geology of the CLARK property is shown on Figure 3 (in pocket). A simplified cross-section (Figure 2) follows this page. The major lithologies involved are:

1. Granitic Basement

This is largely comprised of an unusual pink aplite and granite or alaskite. The aplites are locally brecciated, and a few radioactive zones (largely thorium) have been observed. Age of this complex is not known. The regional basement rocks of approximate granodiorite composition are also met in a few areas.

2. Springbrook Formation

This is the name applied to the basal conglomerate widely found underlying Tertiary lavas in Southcentral B.C. It is a multilithic unit, comprised mainly of granitic cobbles, sub-rounded and poorly sorted. Cementation by silica or silica-carbonate is common, which limits porosity and makes the unit a prominent cliff former. Radioactivity is rare. On the CLARK property the conglomerate appears to have been laid down in a fairly rugged topography, and is of variable thickness, being absent in many areas and at least 30 metres thick elsewhere.

Two important subdivisions of this unit exist. The first shows clasts set in a brown matrix, often with gradational clast margins. This is due to hydrothermal quartz-hematite-carbonate flooding of the Springbrook, and apparently also of other lithologies which have been brecciated.

The second subdivision is an unusually massive sandstone or arkose found in the northern CLARK property. Staining shows this to be low in potassic grains and cemented by silica. Quartz grains are etched to amoeboid shapes. This lithology has gained new importance as host to a coal seam with 1% uranium.

3. Rhyolite Complex

This is an incredible mixture of breccias, tuffs, ashflows and lavas. Composition varies greatly, some being quartz porphyries and others showing leucite (quartz-poor rocks). The colour is generally light, except in regions of yellow and red alterations. Some brecciation is caused by forceful entry of the quartz-carbonate alteration phase mentioned earlier. The rocks have a uniformly low radioactivity, and are often shaley in cleavage. Along with the Springbrook, this unit likely fills in a pre-existing topography.

4. Yellow Lake Phonolites

A sequence of phonolite flows forms the lowest member of the Marron Volcanic Series, and is widely distributed in the Okanagan and West Kootenay areas. These are typically marked by rhombic crystals of anorthoclase and by augite phenocrysts altering to biotite. The phonolites are dark rocks and are moderately radioactive, due largely to thorium. Most of the CLARK property is underlain by these flows.

5. Nimpit Trachyte

Trachyte flows occur higher in the Marron Volcanic Series, and are found only in the extreme east of the mapped area, where they are in fault contact with Yellow Lake lavas.

6. Dacite Dikes

This shaley, grey, non-radioactive lithology looks much like members of the rhyolite complex, but their dikes cut the overlying phonolites. They may be related to the late stage dacite flows of Riddle Creek area. It is possible that the largest of these dikes was emplaced along the axis of the main radioactive channel.

7. Alteration Zones

A few areas have undergone alteration to a point where they are uniformly grey or grey-brown, fine grained rocks, typically of shaley habit. The Yellow Lake phonolites are the major lithology altered. A strengthening of radioactivity is involved, although mostly due to thorium enrichment. These rocks are easily confused with the radioactive tuffs.

8. Radioactive Tuff and Arkose

A widespread unit of grey or grey-brown tuffs and volcanic sandstones occurs in the lowermost part of the Yellow Lake lava sequence. In some places it actually appears at the rhyolite-phonolite contact, presumably due to limited distribution of the lowest phonolite member. Radioactivity observed at this contact in most places appears to be due to other, unidentified causes, however.

The thickness of this shaley tuff-sandstone unit is variable, but appears to be only 10-20 feet over most of the region. Topographic benches formed along its soft horizon give it a disproportionately large outcrop area on maps. In a few localities, however, the unit thickens to at least 100 feet and contains well bedded arkose, coarse tuffs, grit and even conglomerate. These appear to be stream channels, and their upper (coarser) parts have been host to a phase of hydrothermal alteration which left them stained a bright red colour and impregnated with radioactive elements.

These red (and sometimes green) arkoses are better exposed on the adjacent Penticton Indian Reservation than on the CLARK property itself. Some lithologies affected by the alteration appear to have been coarse tuffs or

ashflows, while others were clearly water-laid grits or bedded arkoses. The pink crystals are albitized K-feldspars, and the colour itself presumably due to finely disseminated hematite.

It was originally suggested that the radioactive channels had been formed by fluids associated with eruption of the radioactive trachyte at Riddle Creek, and that these fluids had followed a buried channel down through the CLARK property and then the Skaha reservation. This single channel theory now seems less likely in view of the following:

(a) Small channels with this alteration are found scattered on the CLARK property.

(b) The distribution of pink, radioactive sediments on the Reservation appears more complex than first realized.

(c) A large glacial erratic boulder of this material was found on the OLIVER property, far to the south.

(d) A similar horizon was cut in a deep drill hole north of Yellow Lake, and this was in the Springbrook. Another such case is associated with basal conglomerate in Trout Canyon adjacent to Summerland.

It therefore appears that an oxidizing hydrothermal fluid rich in radioactive elements was widely active during some period of the Eocene, and this caused alterations of various permeable units.

Radioactivity is thoroughly dominated by thorium in these rocks. The actual uranium content is difficult to evaluate in view of the weathered exposures and outcropping of only the more lithified horizons. Some samples of over 100 ppm have been located, and it appears that higher values are from units near the bottom of altered zones. In any case, it is clear that some concentrating mechanisms would be required to produce a deposit, but that this mechanism would only have to be moderately effective in view of the high apparent content of uranium in the hydrothermal fluids.

Reducing conditions produced by sulphides or coal might cause an accumulation. In this regard, it is of interest that carbon trash was observed in radioactive arkose both in the OLIVER sample and at a site on the Penticton Indian Reservation.

The main channel on the CLARK property appears to approach from the northeast, cutting the north end of Farleigh Lake. If it continues in this or virtually any other direction, its buried course must pass from ASTRO into the CLARK claims within a few hundred metres. The only other possibility is that the old channel turned at Farleigh Lake to follow the present valley - in which case its continuation has been eroded.

9. Structure

Block faulting appears to be the dominant tectonic form on this property, and it has greatly complicated the geology. The upper units tend also to have slight dip to the southwest, with erratic steeper inclinations in small blocks and also in the Brent Lake area.

Interpretation of this faulting is economically important, as it controls the level at which southward continuations of the buried channel would be intersected in drilling. It appears that the tuff and channel unit is uplifted in at least two sections in the hillside west of Farleigh Lake, and is hence likely to be close to surface. The situation, however, is complicated by small, discontinuous tuff units above the main layer in the phonolite sequence.

10. Radioactive Coal

A fall logging operation on the hillside south of Brent Lake (northernmost CLARK property) produced new road-cuts which were prospected at the end of the field season. This is an area of the massive arkose unit, apparently lying between more usual Springbrook conglomerate and the rhyolites. The geology is complex and poorly understood. A small, radioactive coal seam was found exposed in a road-cut in the arkose unit. From what could be seen in the rubble, the seam was a few inches wide, and composed of siliceous material with carbon trash and some stringers of coal. The coal was found to contain 1% uranium.

BREAKDOWN OF COSTS (for assessment purposes)

Wages and salaries		
One geologist and two field assistants (line cutters)	$3,880	
Benefits @ 12%	465	$4,345
Truck rental		
One month		950
Meals and accommodation		
36 man days @ $30/day		1,080
Miscellaneous; includes drafting, report preparation, scintillometer rental, etc.		700
Total		$7,075

PAY ROLL RECORD

	Project(s)	Code	Client(s)
1	S. B.C. URANIUM	103	BRINEX
2	(CLARK)		
3			
4			
5			

Name/Project	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	Time Total	Rate	Amou
R.R. Culbert	X	X	X	X	X	X	X			X	X	X	X	X				X	X	X	X						X	X	X	X		20 D	150 ᵈᵃʸ	3000.
	G	G	G	G	G	G	G			G	G	G	G	G				G	G	G	G						G	G	G	G				
L.O. ALLEN					X	X	X	X	X	X			X	X																		8 D	50 ᵈᵃʸ	400.
					F	F	F	F	F	F			F	F																				
D.T. Kenning					X	X	X	X	X	X			X	X																		8 D	60 ᵈᵃʸ	480.
					F	F	F	F	F	F			F	F																				

CLASSIFICATIONS

A Airphoto Work	N General Supervision
B Budget	O Data Analysis
C Compilation/Drafting	P Prospecting
D Drill Supervision	Q Consultation
E Expediting	R Research
F Line Cutting/Surveys	S Staking
G Geological (Mapping)	T Travel
H Geochemical (Sampling)	U Underground Surveys
I Geophysical (Surveys)	V Property Examination
J Trenching	W Legal
K Cooking/Camp	X Accounting
L Logging Core	Y Secretarial/Office
M Mobilization/Demobilization	Z .....

TOTALS	3880
BENEFITS: includes; W.C., U.I.C. & Insurance 15 % Salary	

REMARKS;

Re: CLARK PROPERTY

PREPARED BY: D. M. Leighton

APPR

CERTIFICATION:

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

1. I am a practicing Professional Geological Engineer with offices at 3155 West 12th Ave., Vancouver, B.C.

2. I am a graduate of the University of British Columbia, BaSc. (1964), PhD. (1971).

3. I have practiced mining exploration for fifteen years, most of which were based in British Columbia.

4. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.

5. I have personally visited the CLARK property and supervised exploration work carried out there.

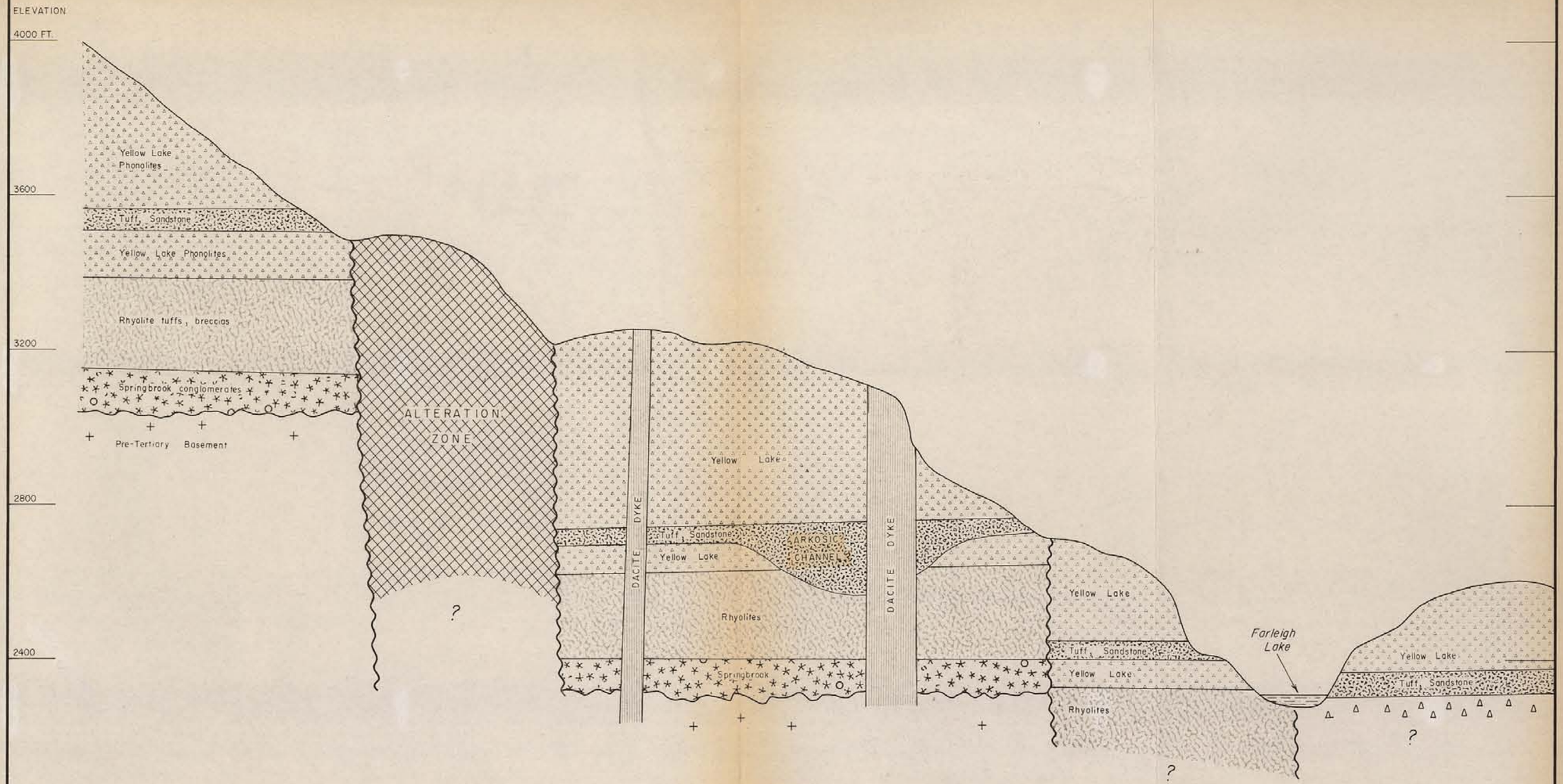
Respectfully submitted,

Dick Culbert

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

28 February, 1979

PROVINCE OF BRITISH COLUMBIA
R. R. CULBERT



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CLARK CLAIM GROUP

CROSS-SECTION

LOOKING NORTHWEST

PROJECT No.	PROJECT	SCALE	DATE
103	S. BC. Uranium	SKETCH	NOV. 78

7185

BRENT LAKE
DAM
NO OUTCROP
APL
GRAN
FLOWS
TUFF
ASHFLOWS
Gdio
ASTRO-45
(Pacific Petroleum Ltd.)
BRECCIA ZONE
Pink Rhyolite
RED BRECCIA
CLARK-1
CLARK-2
CLARK-3
CROSS SECTION
FARLEIGH LAKE
FARM
APEX ROAD
LEGEND
Lithology destroyed by intense alteration (qtz - carb - argil.) with some r/a
Dacite dykes
Nimpit member trachyte flows
Yellow Lake member phonolites. Many are rhombic porphyries
Volcanic sandstones, arkose and tuffs. Solid black is r/a red alteration zones
Rhyolite, dacite etc, Flows, ignimbrite, tuffs, breccias. White, yellow and red common
Cliff forming marker flow
Massive sandstone or arkose. Some coal. Likely part of Springbrook.
Highly altered brown-matrix conglomerates. Multilithic and hydrothermally sealed
Springbrook Fm basal conglomerate. Likely marks base of Tertiary
Granitic basement
Fault or Prominent lineament
Lineament Canyon
Roads
Watercourse
Claim boundary
Control line
Radioactive zone, other than altered Arkose
APL Pink Aplite
GRAN Pink Granite
Gdio Granodiorite
r/a Radioactive
N

7185

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FIG. 3

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CLARK PROPERTY

GEOLOGY

METRES 0 50 100 200 300 400 METRES

PROJECT	PROJECT No	DATE	DRAWN BY
S B.C. URANIUM	103	NOV. - 1978	R.R.C.