

KERR ADDISON MINES LIMITED

SUITE 703 - 1112 WEST PENDER STREET
VANCOUVER, B.C. V6E 2S5
PHONE 692-7401

Copy for Mr. D. Lowrie

~~DK~~
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February 1, 1977

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Mr. J.S. Hollingsworth,
Manager, Exploration Canada,
Union Carbide Canada Limited,
Suite 404,
1112 West Pender Street,
VANCOUVER, B.C.

Dear Stewart:

Re: D.M., Leal and Sue Claims - Vernon Area, B.C.

In accordance with our discussions with you on January 20, we have the following proposition to submit regarding a proposed joint venture in the Vernon area.

1. Union Carbide would conduct the exploration programme under a Management Committee composed of representatives of Union Carbide and Kerr Addison.
2. Exploration costs would be borne by Kerr Addison in the amount of \$400,000 to be expended in equal amounts over a four year period.
3. Kerr Addison would earn:
 - no interest after the first year
 - 20% interest after the second year
 - 40% interest after the third year
 - 70% interest after the fourth year

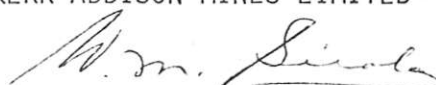
At the end of the fourth year, Kerr Addison would assume management of the operation and would continue to be the operator for the life of the property.

We understand from your more recent discussions with David Lowrie that you intend to carry on your exploration in this area independently for the time being, but it may be possible to work out some form of joint effort in the future.

Best regards,

Yours very truly,

KERR ADDISON MINES LIMITED



W.M. Sirola, P. Eng.
Regional Exploration Manager

c.c. D.A. Lowrie ✓

WMS:meb



UNION CARBIDE EXPLORATION CORPORATION

123 Eglinton, Ave. E., Toronto 12, Canada (416) 487-1311

January 13, 1977

KELOWNA URANIUM PROJECT
PROPOSED JOINT VENTURE

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previous
Dec 1976

Purpose: Hydraulic Lake-type uranium orebody on certain properties in the Kelowna area of British Columbia

- Terms:
- a. Partner to earn 49% of project by expending \$350,000 on the project over a 4 year period. Union Carbide would not contribute until the total \$350,000 has been expended.
 - b. The minimum expenditure in the first year would be \$90,000.
 - c. UCEX would be the operator charging a 10% management fee on direct expenditures.
 - d. The mutual area would be 10 kilometers beyond the perimeter of existing claim groups.

<u>Property:</u>	DM claims	166 units
	Leal claims	112
	Sue claims	146
		424 units

<u>Current</u>		
<u>Expenditures:</u>	Reconnaissance	\$84,000
	Property Work	53,000
		137,000

Proposed 1977

<u>Program:</u>	Drill approximately 50 scattered holes on the three properties after further geologic mapping. Drilling to be rotary/percussion/diamond.	
	50 holes @ \$10.00 per ft.	\$100,000.00
	Office and field geologist and assistant	20,000.00
	Field costs	15,000.00
	Assays, maps, etc.	10,000.00
	Contingency	5,000.00
		50,000.00
		\$150,000.00

J. S. Hollingsworth, Manager
Exploration Canada

DL

KERR ADDISON MINES LIMITED

SUITE 703 - 1112 WEST PENDER STREET
VANCOUVER, B.C. V6E 2S5
PHONE 682-7401

January 25, 1977

Mr. S. Hollingsworth,
Manager, Exploration Canada,
Union Carbide Canada Limited,
Suite 404,
1112 West Pender Street,
VANCOUVER, B.C.

Dear Stewart:

Re: D.M., Leal and Sue Claims - Vernon Area, B.C.

Many thanks for the time and consideration you have given David Lowrie and myself regarding a proposed joint venture for these properties.

Because of corporate policies regarding ultimate control, we seem to have arrived at something of an impasse and we understood at the meeting in your office last week that it was your intent to carry on with your own plans in this area for the time being. I think you will agree that Kerr Addison would have the same prerogatives until such time as something might be worked out. In this connection, it is our intent to submit, in the near future, a counter proposal for your consideration.

Again, many thanks for your efforts and I am sure we would enjoy working together should this eventuality come to pass.

Best regards,

Yours very truly,

KERR ADDISON MINES LIMITED



W.M. Sirola, P. Eng.
Regional Exploration Manager

c.c. Mr. D.A. Lowrie ✓

WMS:meb

A SUMMARY REPORT
on the
KELOWNA URANIUM PROJECT

for

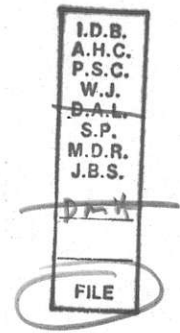
UNION CARBIDE EXPLORATION CORPORATION

by

THE UCEX VANCOUVER STAFF

VANCOUVER, B.C.

December 14, 1976



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SUMMARY

As a result of a general reconnaissance program carried out during 1976, three separate claim groups have been staked by Union Carbide to cover favourable uranium areas in the vicinity of Kelowna, B.C.

The potential targets are epigenetic uranium deposits comparable to Tye Lake Resources' new discovery at nearby Hydraulic Lake. The uranium mineralization occurs within unconsolidated Miocene sediments filling buried stream channels on the pre-Miocene basement.

The three properties were staked where the initial field reconnaissance indicated:

- a. a favourable geological environment similar to Hydraulic Lake.
 - b. the buried paleochannels could be anticipated at relatively shallow depths amenable to open-pit development.
- and c. the target areas were reasonably accessible for drilling.

Only limited ground work has been carried out on the properties since staking. Some preliminary mapping has been completed and some wide-spaced radiometric, botanical geochem, and Track Etch lines have been run on a trial basis. Initial results have confirmed the original reconnaissance data, have indicated some local anomalism, and have broadly outlined several potential paleochannel areas.

Further property exploration will require the drilling of a series of shallow reconnaissance holes with radiometric probing to define the location of the channels and determine their uranium content.

THE KELOWNA URANIUM PROJECT

Introduction:

During 1976, Union Carbide fielded a 5 man reconnaissance team on general uranium exploration in the Rock Creek-Kelowna area of south-central British Columbia. This district was selected on the basis of Union Carbide's earlier field work (1968-70) which had indicated the area to be potentially favourable for uranium mineralization due to:

1. the presence of several known uranium occurrences
2. the presence of an unusually high uranium background level in regional silt samples.
3. the presence of a variable and locally higher background level of radioactivity.

As defined by the '76 program, the principal targets within the area are epigenetic uranium deposits occurring in unconsolidated Miocene sediments along buried stream channels on the basement surface. The Fuki occurrence held by Nissho Iwai (Nuclear Fuel and Development Corporation of Japan) and the Hydraulic Lake deposit recently found by Tye Lake Resources are of this type and Western Nuclear's Sherwood Mine in Washington is quite comparable. Although several similar deposits have been known in Japan for some years, this type of mineralization has only recently been recognized in the Canadian Cordillera and is currently attracting substantial exploration interest in the Kelowna area.

To highlight the essential features of this type of deposit, a basic exploration model was developed and utilized by the Carbide staff in their regional assessment. As a result of the initial reconnaissance three separate claim groups were staked by Carbide to cover selected favourable geological environments where the targets were reasonably accessible for drilling and were at sufficiently shallow depth to allow open-pit consideration.

As shown on Figure 1, the three properties located in the Kelowna area some 20 miles northerly from the Hydraulic Lake discovery are:

The D.M. Group (Pearson Creek)	-	166	units
The Leal Group (Swalwell Lake)	-	112	units
The Sue Group (Aberdeen Lake)	-	<u>146</u>	units
Total	-	<u>424</u>	units

Only limited ground work has been carried out on these claims since they were acquired. A variable amount of preliminary mapping, radiometric prospecting, and rock geochem

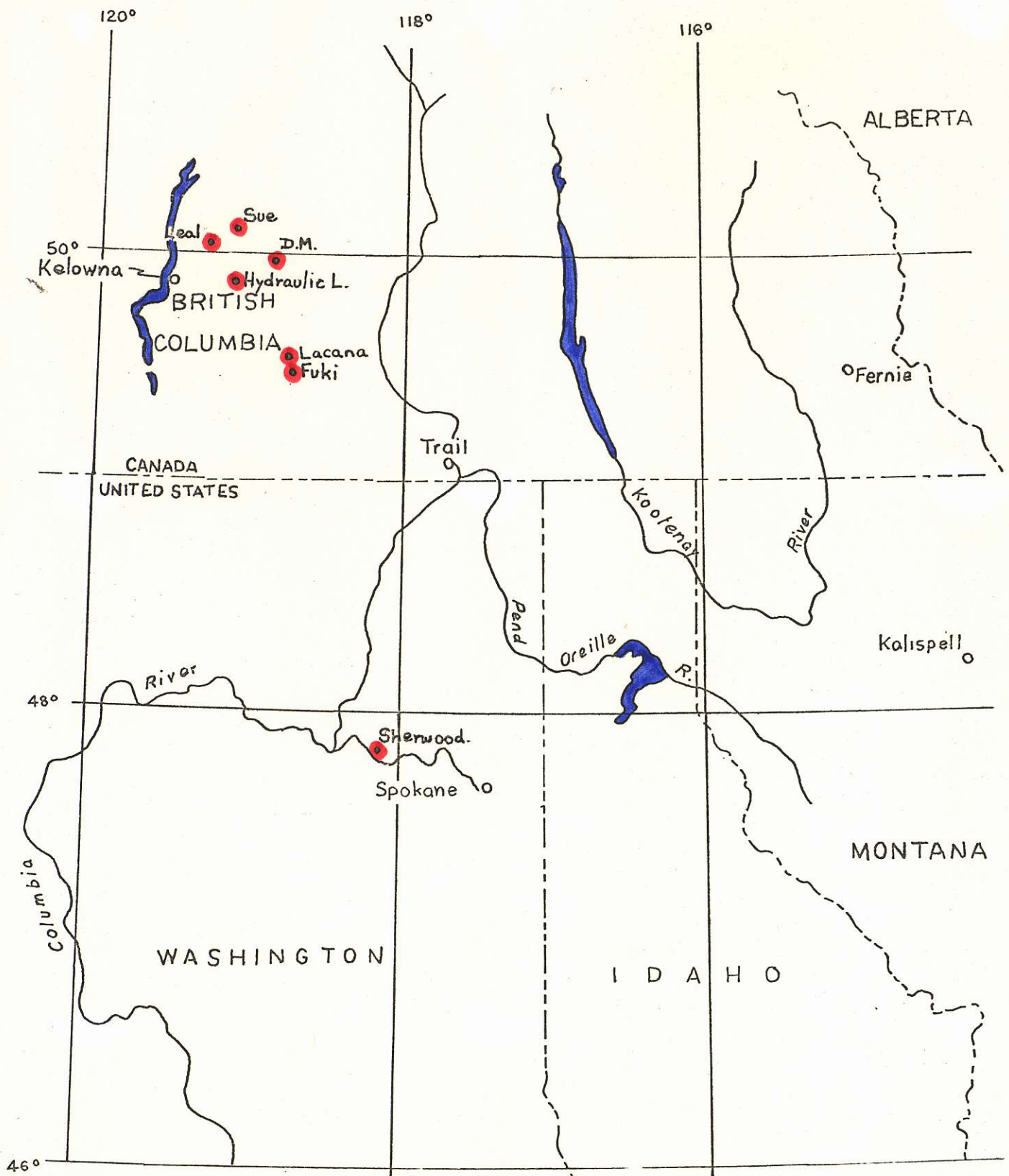


Figure 1 - Locations of Properties Described in this Report.

has been completed and some limited botanical geochem, radiometric, and TrackEtch lines have been run on a trial basis. Initial results have confirmed the original reconnaissance data and have broadly outlined several potential buried channel target areas.

As a result of Tyee's recent discovery at Hydraulic Lake and the optioning of the property to Noranda-Kerr Addison in September, the Kelowna area has been receiving increasing exploration attention over the past few months. The area is becoming widely recognized as a significant new uranium district and substantial staking activity is evident. Union Carbide was fortunate in having their regional assessment virtually completed before the current activity. The early recognition of the type of mineralization and initial field data allowed the selection and acquisition of several, well located, prime exploration targets.

History:

Although the south-central B.C. area has been extensively explored for base metal and precious metal deposits over the years, little uranium interest was evident prior to the late '60s. Carbide's initial uranium activity in the area consisted of a regional silt sampling program which commenced in 1968 but terminated in 1970 due to the Federal Government policy statements on foreign ownership of uranium reserves.

In late 1969, the Japanese company Nissho Iwai discovered the Fuki uranium occurrence - a small but significant deposit near Beaverdell. Although small, this find was the first confirmed occurrence of this type of mineralization in Tertiary rocks in Canada and provided sufficient encouragement for the Japanese to continue their regional exploration effort.

Over the intervening years, Nissho Iwai has continued their search for this specific type of mineralization and, with a limited budget, has gradually worked northward. A number of properties have been staked and variably tested - some have been dropped and several are still held. Although no general information had been released by Nissho Iwai, a limited amount of property information has become available through assessment files, government reports, and general industry sources. In particular, some ore grade intercepts have reportedly been obtained in drilling in the Hydraulic Lake area.

Nissho Iwai's program was obviously based on their prior experience and knowledge of comparable Tertiary uranium deposits in Japan. Their exploration has involved a great reliance on conceptual geology, preliminary mapping, and reconnaissance drilling.

In late 1975, Tyee Lake Resources reviewed the available uranium data and acquired ground between two of Nissho Iwai's claim groups in the Hydraulic Lake area. Following preliminary mapping, reconnaissance drilling was initiated in 1976 with significant

mineralization being encountered in the third hole. After further grid drilling, the property was optioned by Noranda-Kerr Addison in September and property work is continuing. Although no reserve figures are yet available, the drilling is known to have encountered a buried channel at relatively shallow depth (150-200 feet) with an average thickness of 33 feet and an average grade of 1.3 lb. U₃O₈ per ton. Grid drilling has confirmed the channel over an area of 350' X 600' with the deposit reportedly remaining open in three directions.

Similar mineralization has recently been reported by Lacana Mining Corp on their Lassie Lake property near the original Fuki occurrence. Several reconnaissance percussion drill holes have been completed and ore-grade intercepts have been obtained in three holes. As recently announced, a follow-up, grid drilling program is to commence shortly.

General Geology:

The region is underlain by a diversity of rock types ranging from highly deformed Proterozoic gneisses to completely undisturbed flat-lying Miocene basalts.

The pre-Tertiary basement rocks consist of:

- a. the Shuswap Complex - a Proterozoic (?) complex of granitic gneisses, migmatites, pegmatites, and highly metamorphosed sediments and volcanics
- b. the Anarchist Group - a Permian - Pennsylvanian sequence of variably metamorphosed volcanics and sediments (greenstone, greywacke, quartzite, with minor limestone and paragneiss)
- c. the Nelson and Valhalla Plutonic Rocks - a series of major granitic batholiths and local stocks of late Jurassic - mid Cretaceous age. Compositions vary from granodiorite to quartz monzonite and granite.

The pre-Tertiary basement volcanics and sediments have been complexly deformed by folding, faulting, and local intense shearing.

The older rocks are unconformably overlain by local Tertiary basins filled with thick accumulations of Eocene sediments and volcanics and later Miocene basalts. The Eocene sequences are characterized by great thicknesses of sandstone with intercalated conglomerates and shales (the Kettle River Formation) grading upwards with increasing frequency into interlayered volcanic flows (andesites, trachytes, and basalts of the Marron Formation).

At the close of the Eocene, much of the area was uplifted and block faulted. The Eocene rocks are frequently gently folded and tilted. This late tectonic activity was accompanied by local emplacement of small granitic and syenitic stocks (the Coryell intrusives).

Following a period of prolonged erosion, a moderate peneplain surface developed on the upland plateau and the new drainage channels were partially infilled with unconsolidated conglomerates, sands, and gravels. These channels were subsequently covered by a thin veneer of flat lying Miocene basalts which infilled the gentle valleys on the pre-Miocene plateau surface.

The entire region has been intensely glaciated with ice movement mainly from the north. Thick glacial till is prevalent throughout much of the area and glacio-fluvial clay, sand and gravel deposits are common. The outcrops are well scoured and much of the Miocene basalt cover has been stripped leaving only local remnant cappings.

The Exploration Model:

The mineralization currently being found, and explored for in southern B.C., differs significantly from the typical sandstone or roll-front uranium deposits found in the United States, both in mechanism of formation and in direct exploration guides.

The known deposits directly comparable with the Hydraulic Lake type of mineralization are:

	Tonnage	Grade
Ningyo - Toge Mine, Japan	5,500,000	1.02 lb. U ₃ O ₈ /ton
Tono Mine, Japan	7,500,000	1.08 lb.
Sherwood Mine, Wash.	8,000,000	1.76 lb.

Whether the Japanese deposits are currently in production remains unknown but they have been developed to some considerable depth. The Sherwood Mine is presently being developed for open-pit production by Western Nuclear who plan to have a 2000 tpd mill in operation in 1978.

These deposits have the following features in common with the Hydraulic Lake type:

1. the mineralization occurs within relatively unconsolidated Tertiary conglomerates, sands, and gravels filling buried stream channels on an underlying erosional surface.
2. the mineralization is more prevalent toward the base of channel, tends to be strata-conformable, and the deposits may be narrow and sinuous or nearly equi-dimensional in shape.
3. the mineralized zones have been protected from erosion,

glaciation, and surface leaching by a protective capping.

4. ore grades are consistently in the range of 1-2 lb. U_3O_8 per ton with occasional higher grade sections.
5. the ore thicknesses vary from 3-6 feet (in the Japanese deposits) to 40-60 feet (at the Sherwood)
6. the uranium occurs as finely disseminated uraninite within the sandy matrix of the conglomerates and as rims of mineralization around the conglomerate pebbles and cobbles.
7. the uranium can be recovered by standard uranium milling techniques. Heap leaching and upgrading techniques have reportedly yielded successful test results on some of these ores.

The Japanese deposits and the known B.C. occurrences are all found within totally unconsolidated Miocene sediments - the Sherwood mineralization occurs within poorly consolidated sediments of probable Eocene age. In all the B.C. occurrences known to date, the mineralized zones have been preserved by a protective capping of overlying Miocene basalt. At the Hydraulic Lake and Sherwood deposits the basalt capping has been partially stripped by glacial scouring leaving the mineralization covered only by recent glacio-fluvial clays and gravel peripheral to the basalt.

Based on these known deposits, a general exploration model had been derived and modified to suit the southern B.C. environment. As shown on figure 2, the essential geologic features of this model are:

1. A uranium source area - generally the underlying or immediately adjacent basement rocks (usually granitic) containing low but anomalous amounts of uranium.
2. A structural feature - faulting or shearing (which may have influenced channel development) which has allowed ground waters to liberate the uranium from the source rocks and has provided a plumbing system through which the ground water has migrated.
3. A buried stream channel filled with unconsolidated conglomeratic sediments on the erosional basement surface which has served as an aquifer for the uranium-bearing ground water.
4. A depositional zone within the channel where carbonaceous, or pyritic material has created the necessary reducing environment to precipitate the uranium.
5. A protective capping - generally flat lying Miocene basalt flows which have preserved the mineralized zones from erosion, glacial scouring, and leaching by heavy rainfall.

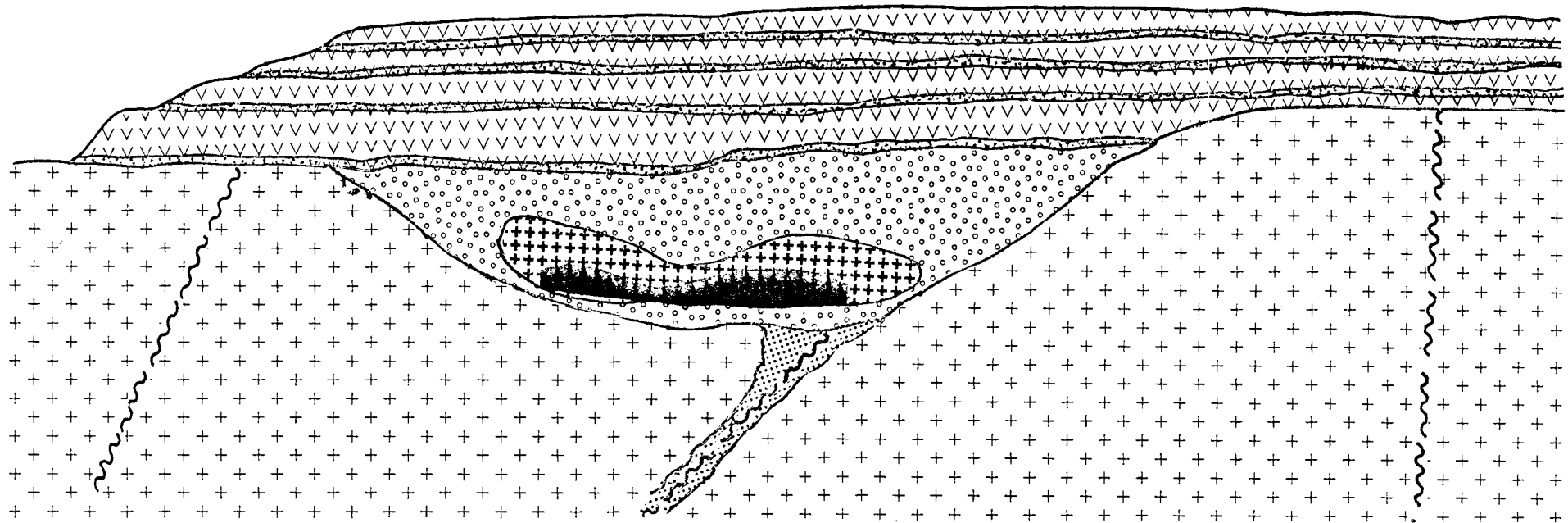
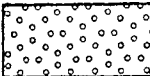


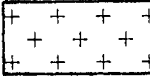



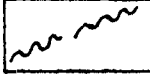


Figure 2: idealized cross-section of a Miocene uranium ore body.

- | | | | |
|---|---|---|--|
|  | Miocene Paleochannel: unconsolidated sandstone and conglomerate which must be protected against erosion, glaciation and excessive leaching. |  | Scoria and Conglomerate: thin interlayers separating basalt flows. May be radioactive |
|  | Low Grade Ore: a "halo" surrounding high grade ore bodies. |  | Basement Granites: should be able to supply anomalous amounts of uranium to ground waters. |
|  | High Grade Uranium Ore: located in areas of highest reducing potential |  | Zone of Leached Cataclastics and Weathered Granite |
|  | Miocene Basalt Flows: protective cap rock |  | Faults: faults and fractures in basement rocks act as "plumbing" for circulating ground waters |

Vertical scale: 1" = 100'

Horizontal scale: 1" = 100"

M. D. J.

Selection of Areas:

Union Carbide's program has involved a regional assessment of the pre-Miocene drainage system with particular attention being directed to areas of potential paleochannel development under and peripheral to the Miocene basalt flows. Some regional re-mapping of the Tertiary rocks has been necessary to determine the location, extent, and thickness of these basalts.

Additional prospecting, radiometric traversing, and rock and silt geochemical studies were carried out on a regional basis on the basement rocks to define potentially favourable structural environments and possible uranium source areas.

Where field reconnaissance confirmed a generally favourable geological environment and paleochannels could be reasonably implied under the covered areas, three additional practical exploration criteria were considered before staking:

1. the basalt cover should be relatively thin (not exceeding 200 feet).
2. the anticipated targets should be reasonably shallow and preferably amenable to open-pit development (eg. maximum depth of roughly 250 feet).
3. The immediate targets should be readily accessible for reconnaissance drilling.

Properties:

As a result of the initial regional reconnaissance program, three separate properties were staked over favourable target areas. These are shown on figure 1 and are briefly summarized as follows:

1. The D.M. Claim Group - N.T.S. 82-E-15W (see figure 4). The property consists of 166 units staked in August and is located in the Upper Pearson Creek area 24 miles east of Kelowna and 16 miles northeast of Tyee's Hydraulic Lake deposit. The claims were staked immediately adjacent to a property previously held and drilled by the Japanese - some anomalous uranium values were reported at the base of an 800 foot deep Eocene (?) basin. Although these values are too deep to be of immediate economic interest, they do confirm the migration of uranium through the general area.

The claims were located to cover a number of thin (0-200 foot thick) Miocene basalt remnants trending northeasterly parallel to the Pearson Creek drainage. A pre-Miocene drainage system is implied in their vicinity and depth to basement is shallow. The underlying basement rocks are Eocene volcanics and Shuswap metamorphics. Particularly

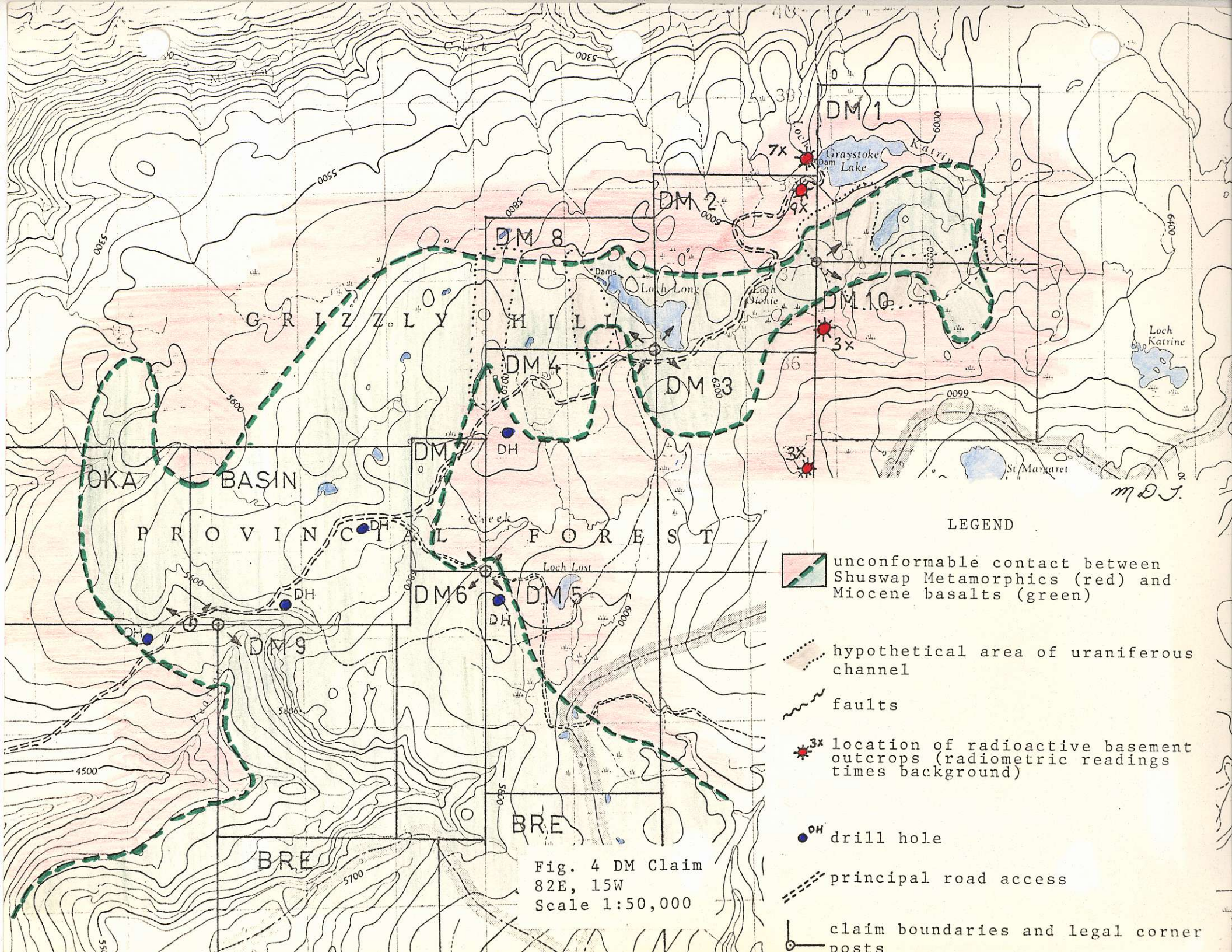









Fig. 4 DM Claim
82E, 15W
Scale 1:50,000

LEGEND

-  unconformable contact between Shuswap Metamorphics (red) and Miocene basalts (green)
-  hypothetical area of uraniferous channel
-  faults
-  location of radioactive basement outcrops (radiometric readings times background)
-  drill hole
-  principal road access
-  claim boundaries and legal corner posts

in the northeast part of the claim group, the Shuswap basement is locally quite radioactive and high rock geochem values have been obtained. This could provide a very favourable uranium source area.

Preliminary property work completed to date has included preparation of a 1:10,000 scale topographic base map, geological mapping, and wide-spaced test lines using radiometrics, botanical geochem, and Track Etch. Several areas of potential paleochannels have been broadly outlined and some local anomalous results have been obtained on the test lines.

2. The Leal Claim Group - N.T.S. 82-L-3E (see figure 5). The claim group consists of 112 units staked in September in the Swalwell Lake area 12 miles northeast of Kelowna and 16 miles northwesterly from Hydraulic Lake.

The claims were staked to cover two potential paleochannel areas underlying thin Miocene basalts and overlying radiometrically anomalous Shuswap basement. The eastern area was selected because it is continuous with the drainage represented by Beaver Lake - Crooked Lake to the northeast and this present drainage is thought to be similar to the earlier Miocene drainage in this area.

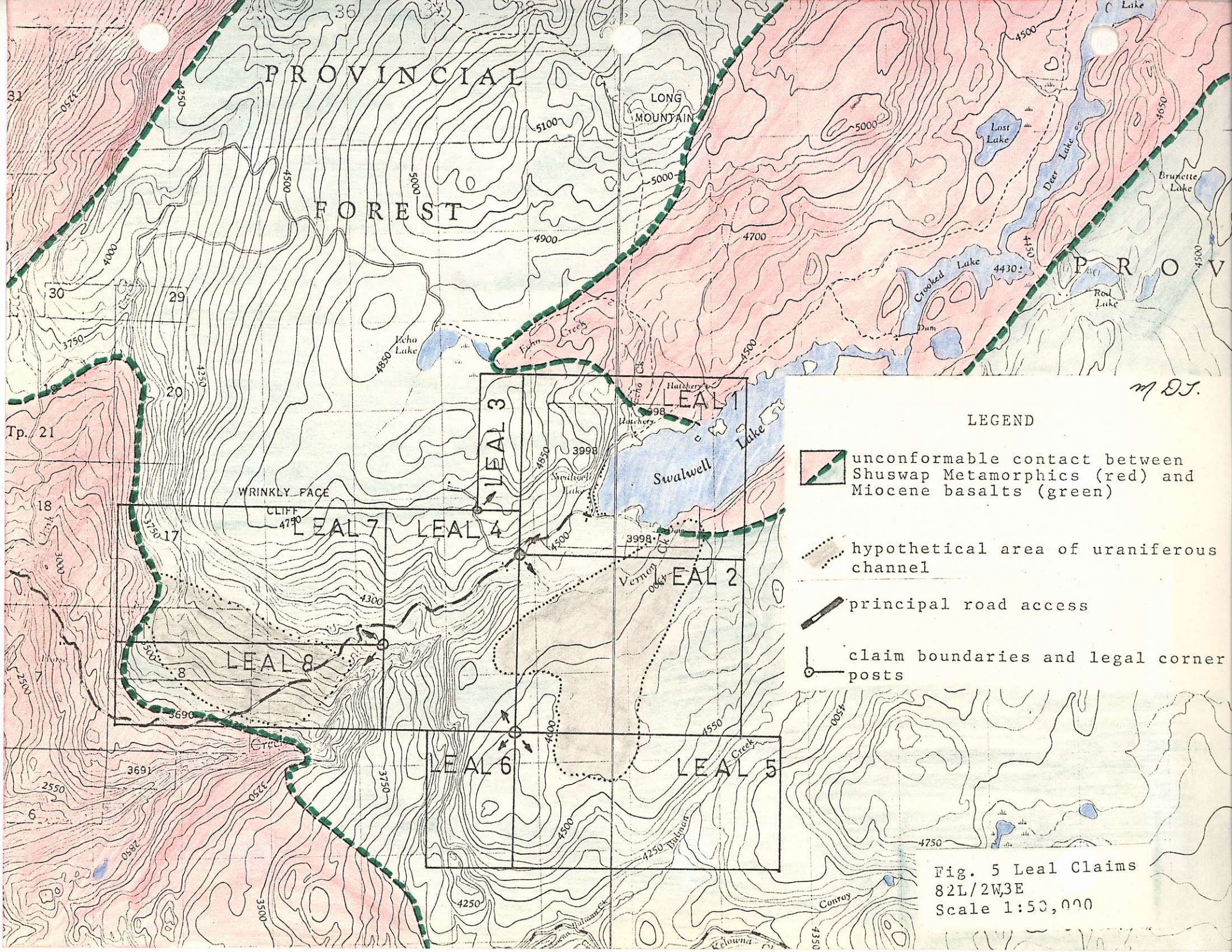
The western area was covered because paleochannels had previously been reported in the literature as lying below Wrinkly Face Cliff. These exposures have not as yet been relocated. The area is generally low-lying, is quite accessible, and the basalt cover appears to be thin.

Property work completed to date has included initial reconnaissance mapping on a 1:10,000 topo base and a few trial Track Etch lines.

3. The Sue Claim Group - N.T.S. 82-L-3W (see figure 6) The property comprises 146 units staked in November in the Aberdeen Lake area 20 miles northeast of Kelowna and 24 miles north of Hydraulic Lake.

The claims cover several remnant patches of flat lying Miocene basalt which are distributed in a more or less linear, branching pattern suggestive of an underlying drainage system. The basalts are locally thin and overly Shuswap metamorphic gneisses which have been intruded by fine grained granitic masses and dykes. The granitic rocks are anomalous in uranium content (values up to 10 ppm) and could represent a favourable underlying source area.

Several major faults showing some radioactivity have been noted in the basement rocks and these could have influenced the drainage development and provided favourable



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LEGEND





-  unconformable contact between Shuswap Metamorphics (red) and Miocene basalts (green)
-  hypothetical area of uraniferous channel
-  principal road access
-  claim boundaries and legal corner posts

Fig. 5 Leal Claims
82L/2W,3E
Scale 1:50,000

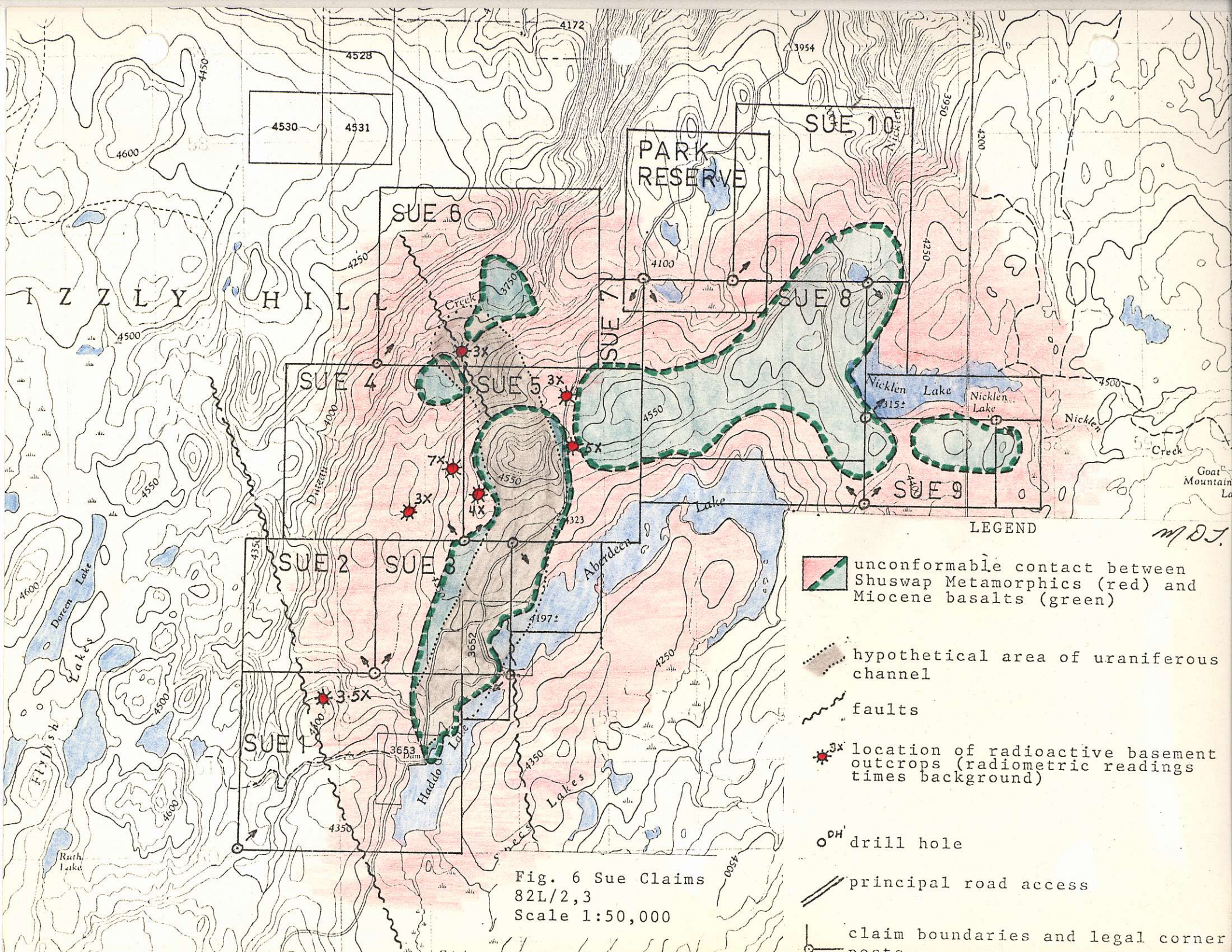









Fig. 6 Sue Claims
82L/2,3
Scale 1:50,000

LEGEND

-  unconformable contact between Shuswap Metamorphics (red) and Miocene basalts (green)
-  hypothetical area of uraniferous channel
-  faults
-  location of radioactive basement outcrops (radiometric readings times background)
-  drill hole
-  principal road access
-  claim boundaries and legal corner posts

M.D.J.

plumbing systems.

Property work to date has been limited to initial prospecting and reconnaissance mapping.

General Exploration Considerations:

In exploring for Hydraulic Lake type mineralization in south-central British Columbia, several unusual factors warrant consideration.

1. Glacial till cover is extensive throughout most of the area and bedrock exposures of all rock types are extremely limited. An outcropping of a Miocene paleochannel is least likely of all due to the unconsolidated nature of the sediments and their poor preservation when exposed.
2. Even where buried channels have been exposed by erosion their identification is difficult as they are almost indistinguishable from the more recent glacial deposits.
3. Surficial leaching of uranium is probably prevalent throughout the region. At the Sherwood Mine, the sub-outcrop is severely leached to a depth of 10-18 feet.
4. Although outcrops of paleochannels are unlikely, preliminary geological mapping is necessary to define those areas of cover between the basalts and the basement where buried channels might exist.
5. In view of the "blind" nature of the deposits, they present difficult targets for direct geochemical and geophysical detection. Due to the cover, standard reconnaissance systems (both geophysical and geochemical) would be relatively ineffective over much of the region.

On a local basis where the capping is shallow or significant mineralization has already been indicated, some useful indirect information might be obtained by:

- a. surface radiometric, Track Etch, and geochem surveys to detect primary dispersion haloes around the deposits.
- b. magnetic surveys to define the limits of the basalt cover.
- c. hammer-seismic profiles in the absence of basalt to provide information on the depth to basement.
- d. VLF-EM surveys to outline major basement fault structures.
- e. I.P. surveys to define pyritic zones within the channels (a good I.P. correlation has been reported at Hydraulic

Lake where a zone of secondary marcasite nodules overlies the uraniferous deposit)

6. The most effective direct exploration technique is that used successfully by both the Japanese and Tyee in making their discoveries - wide-spaced reconnaissance drilling and radiometric probing of the holes to detect the channels and define areas requiring closer drilling.

Work Proposal:

As a potential target, a 3 million ton deposit with a 1.3 lb. U₃O₈ grade would very probably be viable in the general area. Assuming a thickness comparable with the Hydraulic Lake deposit (33 feet), this target would have dimensions in the order of 1000 X 1500 feet.

Several possible paleochannel areas well in excess of these dimensions have already been defined by the initial property work. Preliminary mapping of both the Leal and Sue properties should be completed to further refine the most favourable areas for buried channel development.

Bearing the above dimensions in mind, a wide-spaced reconnaissance drilling program is proposed using the existing logging roads as much as possible. The prime purpose of this initial program is to rapidly confirm the presence of buried channels within the selected areas and to define those which warrant further interest. For this purpose, the holes should be driven to basement and radiometrically probed. In this initial program, core will not be required but the variety of field conditions may require a combination of rotary/percussion/diamond drilling.

On the basis of the present information, a total of some 40-50 holes averaging 200 feet in depth will be required to provide a minimum reconnaissance coverage over the selected areas on the three properties.

Vancouver, B.C.
December 14, 1976

D. L. Cook
J. S. Hollingsworth
M. D. Tilkov
R. D. Westervelt