MOUNTAINEER MINES LTD. - PAN OCEAN OIL LTD.

JOINT VENTURE

PRELIMINARY GEOLOGICAL REPORT

on the

OWL 1-20 MINERAL CLAIMS

N.T.S. 106-E-2

65°13'N 134°44'W

YUKON TERRITORY

by

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November, 1977

090288

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $2000.00

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. R. BAXTER
Supervising Mining Recorder

for Commissioner of Yukon Territory

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1.0 INTRODUCTION

The OWL 1-20 mineral claims were staked on November 29, 1976 by Pamicon Developments Ltd. for Pan Ocean Oil Ltd. The claims were staked to cover a uranium water geochemistry anomaly based on data released by the Geological Survey of Canada.

During the periods June 4 to 9, 1977 and June 26 to July 4, 1977 geologic evaluation and detailed prospecting was carried out in the claims area by Pamicon Developments Ltd. under the field supervision of R. Darney.

2.0 LIST OF CLAIMS

CLAIM NAME	RECORDING DATE	STAKING DATE	GRANT NUMBERS
OWL 1-20	December 17/76	November 29/76	YA14823-YA19842 incl.

Claim posts examined by the author appear to conform with the Yukon Quartz Mining Act regulations.

3.0 LOCATION AND ACCESS

The OWL group is located 2 miles west of Kiwi Lake in the northeastern Yukon Territory. The property is 115 miles north-northeast of Mayo, Y.T. Approximate co-ordinates of the claim group are $65^{o}13'N$ and $134^{o}44'W$.

Access to the property is recommended by float-equipped aircraft from Mayo to Kiwi Lake and helicopter from there to the property. Both helicopter and fixed wing aircraft as well as full expediting services are available in Mayo.

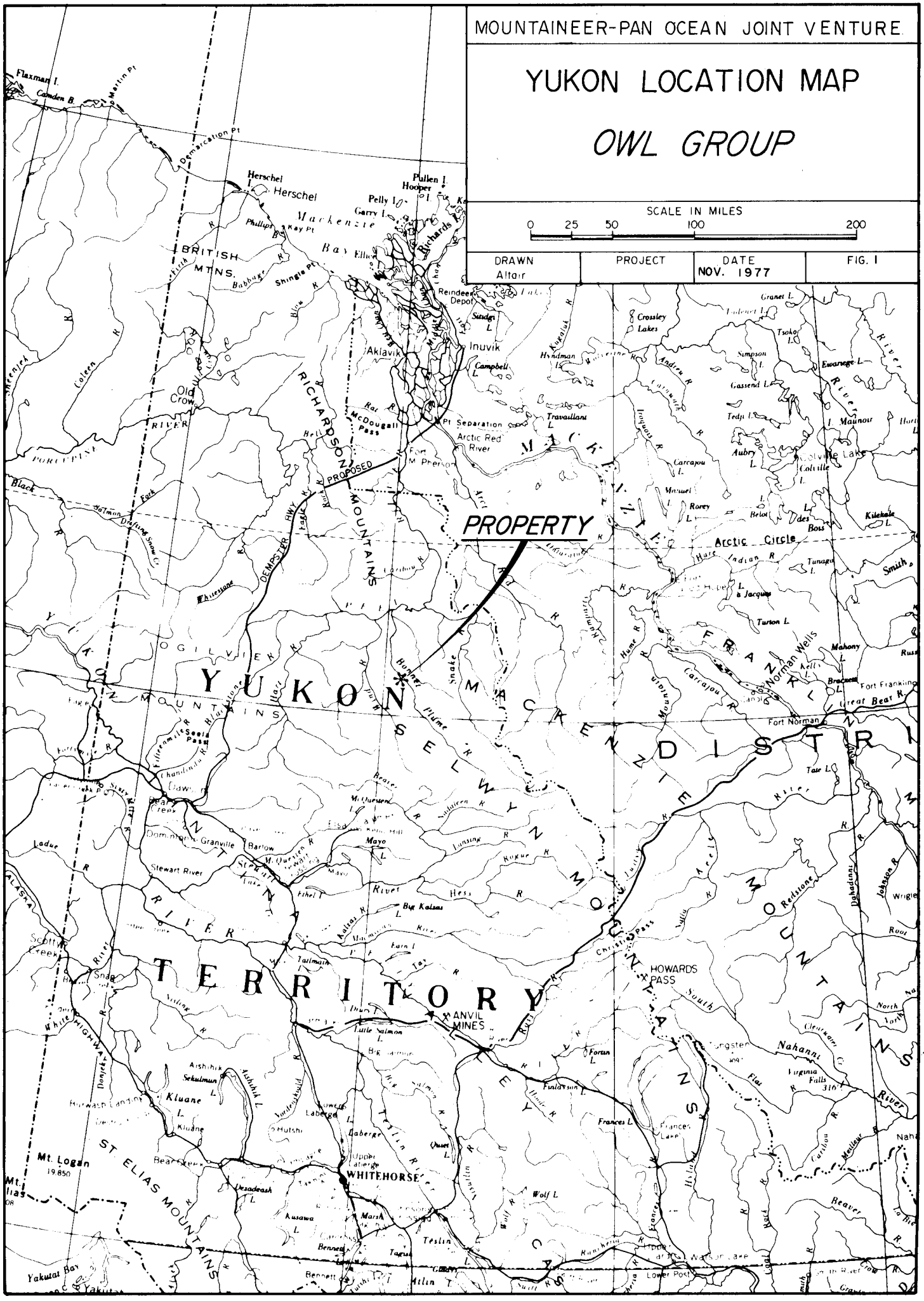
MOUNTAINEER-PAN OCEAN JOINT VENTURE

YUKON LOCATION MAP

OWL GROUP

SCALE IN MILES
0 25 50 100 200

DRAWN	PROJECT	DATE	FIG. 1
Altair		NOV. 1977	



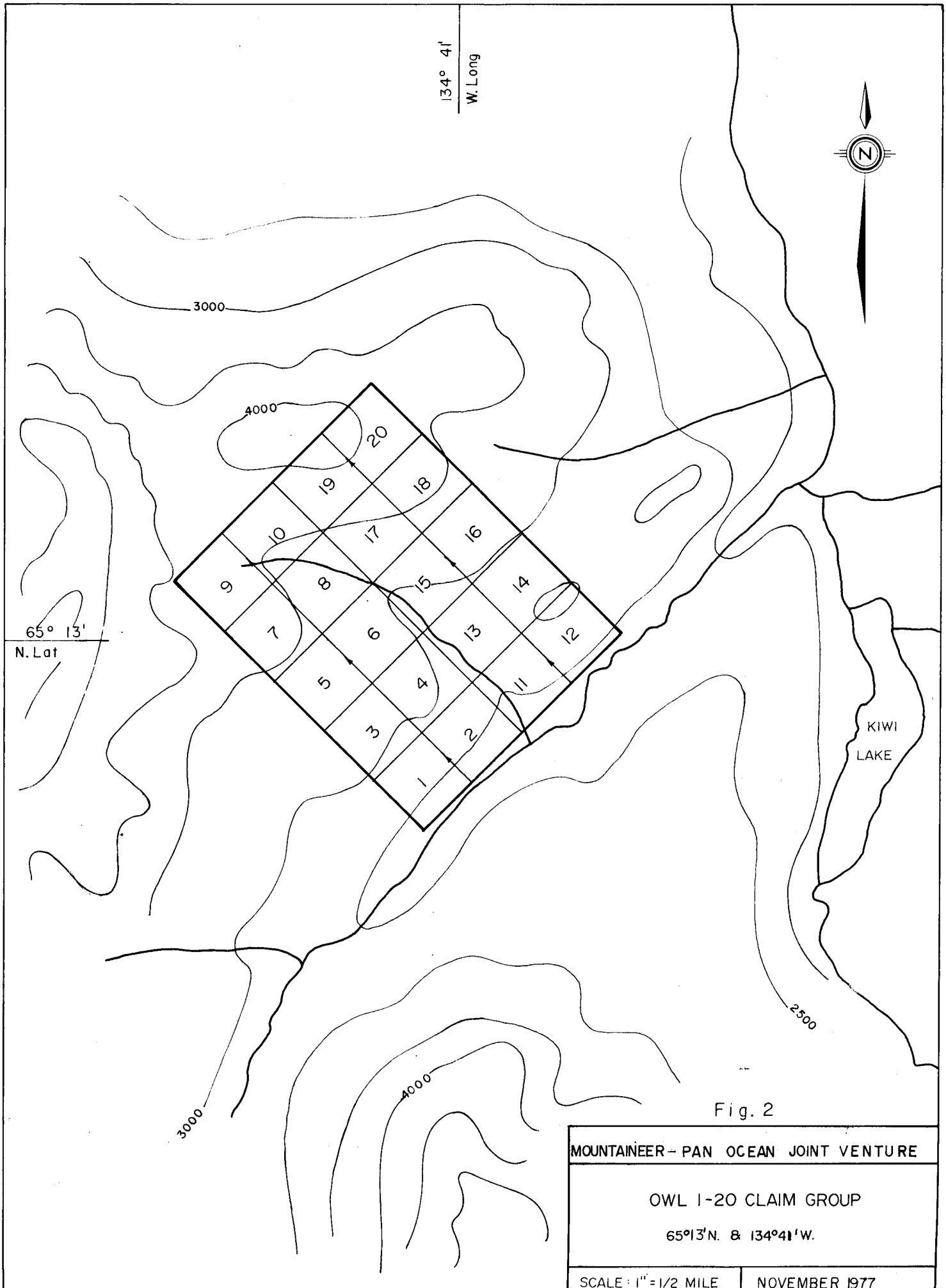


Fig. 2

MOUNTAINEER – PAN OCEAN JOINT VENTURE	
OWL 1-20 CLAIM GROUP 65°13'N. & 134°41'W.	
SCALE : 1" = 1/2 MILE	NOVEMBER 1977

4.0 TOPOGRAPHY AND VEGETATION

Elevations on the property range from 2,200 to 4,200 feet and topography ranges from moderate to rugged. Most outcrops are restricted to ridges and to stream channels. The tree line lies at approximately 3,500 feet and spruce, willow and alder are found at lower elevations while low grasses and caribou moss cover higher terrain.

5.0 REGIONAL GEOLOGY

The Quartet-Fairchild region lies in the Wernecke Mountains of the northeastern Yukon Territory. In the general area, the Werneckes consist of local ranges which include the Rackla Range, Bonnet Plume Range and Knorr Range. Topography is normally moderate to rugged with elevations ranging from 2,000 to 6,500 feet. The major river valleys are broad, timbered and extensively overburden covered, while most mountain slopes present greater than 60% outcrop above the 4,000 foot level.

The entire area has been mapped by the Geological Survey of Canada and three separate publications are presented. The following memoir and open file reports give 1" = 4 miles geological coverage of the Nash Creek, Nadaleen River, Wind River and Snake River map areas.

(1) Geology of Nash Creek, Larsen Creek and Dawson Map-Area, Yukon Territory by L.H. Green 1972 (Memoir 364).

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(2) Open File 205 (Geology of Nadaleen River and Bonnet Plume Lake Map sheets by S. Blusson) 1975.

(3) Open File 279 (Geology of Snake River and Wind River sheets by D.K. Norris) 1975.

In the Quartet-Fairchild-Gillespie Lakes region Helikian rocks are exposed over an area of some 1,500 sq. miles in a roughly circular fashion centered near Longitude 134°00W and Latitude 65°oo'N.

These rocks have been described as Units 1 & 2 by L. Green on the Nash Creek Sheet.

Recent G.S.C. stratigraphic work by Bell and Delaney (1976) has redesignated Units 1a, 1 and 2 (Green 1972) as Units A, B, and C respectively. The unit designations as established by Bell and Delaney will be used in this report.

Unit A whose base is not exposed, is composed of a thick succession of moderately metamorphosed fine grained clastic sediments with interbedded carbonates. The overlying Unit B consists of thinly interbedded slates and argillites with occasional quartzite beds.

Unit C, which conformably overlies the uppermost slate-quartzite section of Unit B, consists mainly of thickly bedded orange weathering dolomites. The base of the unit is marked by a series of transitional beds of alternating buff weathering dolomites and interbedded slates and quartzites.

Erratically distributed throughout the Proterozoic metasediments are irregularly shaped breccia bodies. The

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breccia zones vary from tens of feet to several thousand feet in size and appear as cross cutting pipe-like features at all levels in the stratigraphic column. Several varieties exist, but all exhibit an assortment of angular clasts derived from rock types common to the area. Hornfels margins observed at several localities indicate an intrusive origin.

A common association with many of the breccia bodies are zones of veining or locally pervasive feldspar alteration seen as internal features within the breccias or in host rocks adjacent to them.

The alteration zones are pink in colour due to either K-spar or strong hematization and in some instances contain varying amounts of specularite, chalcopyrite and minor uranium mineralization.

5.1 Structure

Two major periods of deformation have taken place within the Wernecke Mountain region. During the first period or Racklan Orogeny, the Proterozoic rocks of Units A, B, and C underwent intense folding and faulting. Folds are tight to isoclinal with the development of strong axial plane cleavage and commonly an almost vertical foliation.

A major unconformity of Lower Hadrynian age forms the upper contact of Unit C. In many localities, erosion beneath this unconformity has resulted in the complete removal of Unit C and the strong angular relationship between the relatively flat lying Cambrian and younger rocks directly overlying Units A and B is apparent.

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Further unconformities near the Upper Hadrynian, Lower Cambrian and Upper Cambrian margins leave Devonian carbonates directly over the Helikian section.

The second period of deformation, which involves both Paleozoic and Proterozoic strata, is weak compared to the first. This is particularily evident in the younger carbonate sections to the west and southwest where deformation consists mainly of broad open folding and minor overthrusting.

6.0 PROPERTY GEOLOGY

6.1 Introduction

The OWL 1-20 mineral claims cover Unit A rocks of lower Helikian age. Four lithologic sub-divisions have been recognized. The area under study is variably metamorphosed, faulted, folded and intruded by thick bull quartz veins. See Figure 3 for the geology of the OWL claims area.

Geochemical analysis of stream silts demonstrated anomalous values of U_3O_8. However, to date there were no visible uranium occurrences found.

6.2 Lithology

The banded quartzite, map Unit A1, is found exposed along the southern perimeter of the OWL group property. The unit locally contains silty or impure quartzites. Other minerals present are chlorite and possibly pyrite. Banding is exemplified by chlorite segregate layers and partings. The base of the unit was not observed. Map Unit A2 consists of

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a quartz-chlorite schist which locally contains biotite and muscovite. Although the schist normally exhibits strong foliation and compositional banding, it often lacks a true banded character and appears phyllitic.

Relict bedding is frequently identifiable. The schist is green-grey, fine to medium-grained, weathers green grey and grades upwards through a transition zone into a dark green metasiltstone.

The metasiltstones, map Unit A3, contains dark green rocks at the base which become light green upwards through the section. The unit is massively bedded, medium grained and insipiently schistose, and composed mainly of quartz and chlorite. Best exposures are found on the ridge located in the eastern part of the property. Locally the unit is interbedded with quartzite.

Float samples found on the northeastern ridge on the property lead to the selection of a fourth lithological group. This preliminary map unit, A4, is described as a medium to dark grey, finely crystalline and thinly bedded siltstone/sandstone.

All four map units belong to regional Map Unit A of Helikian age.

6.3 Structure and Stratigraphy

Stratigraphically the banded quartzite is the oldest map unit exposed on the property and is overlain by the schist/phyllite map unit. The dark green metasiltstone overlies

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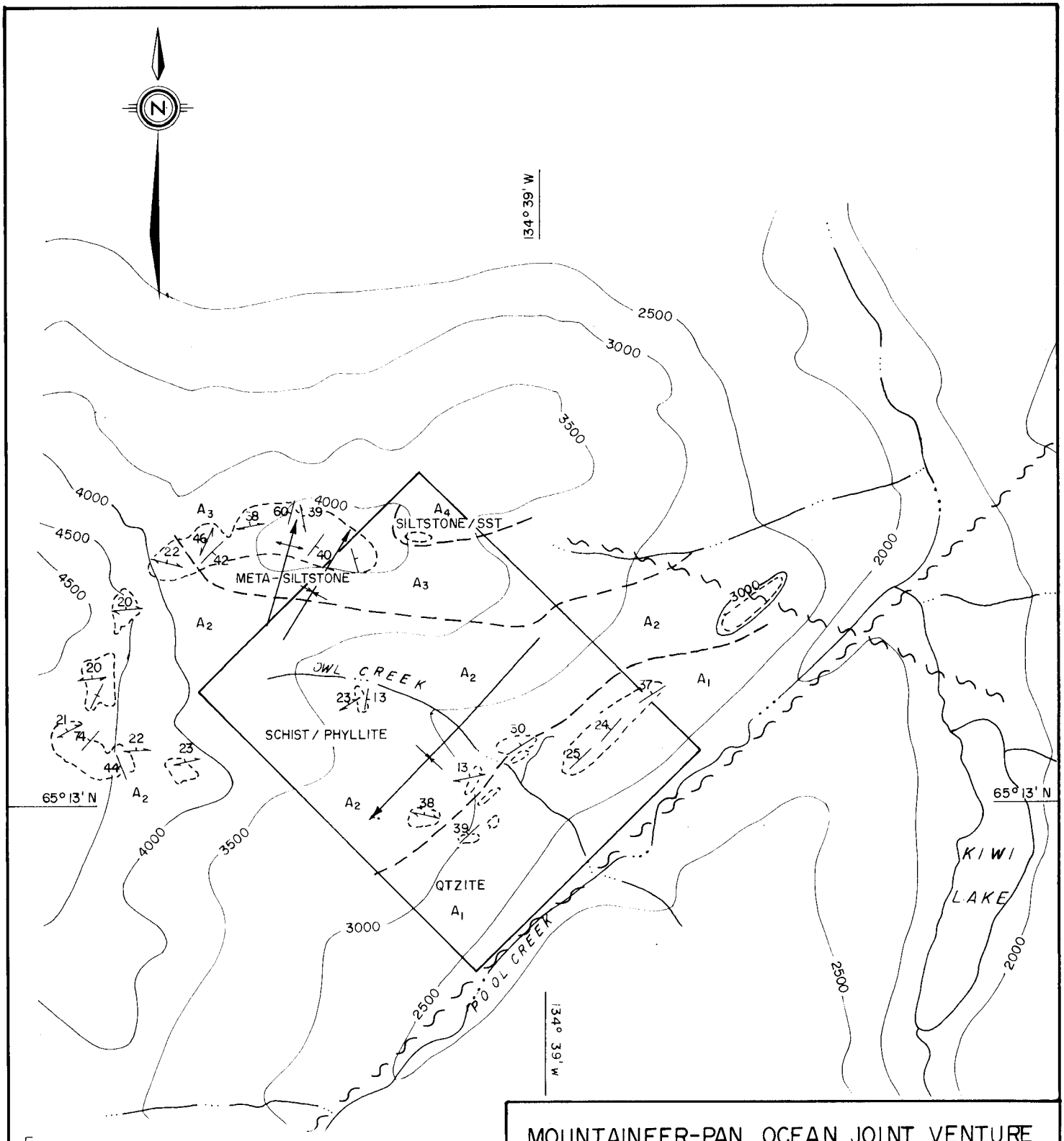

UNIT A

A4	Siltstone/ Sandstone
A3	Green Metasiltstone
A2	Phyllite / Schist
A1	Banded Quartzite

Contact
Fault
30 Schistosity Attiude
17 Bedding Attitude
Synform
Antiform
Fold Axis

MOUNTAINEER-PAN OCEAN JOINT VENTURE

OWL 1-20 MINERAL CLAIMS
NTS 106-E2

PRELIMINARY GEOLOGY MAP

YUKON TERRITORY

0 1/2 1 1 1/2 MILES

PAMICON DEVELOPMENTS LIMITED

DRAWN:	PROJECT:	DATE:	FIGURE:
Altair	Quartet-Fairchild	DEC 1977	3

the schist/phyllite through a small transition zone. The youngest lithology exposed on the property is the sandstone/siltstone found in the northeast corner of the group.

Several small folds with an axial trend of 30° and a gentle plunge to the southwest cross the property. Minor faulting and associated bull quartz veining is found close to the fold axes.

Metamorphism of the silty and siliceous meta-sediments has produced the banded quartzite and the schist/phyllite. Relict compositional banding is generally well preserved in the schist/phyllite unit. Metamorphic grade increases towards the south.

A large northeast trending fault at the southeastern perimeter of the property may be a factor in creating the structure found on the group.

6.4 Mineralization

Despite a favourable geological and geochemical environment, there were no discoveries of uranium or copper mineralization during either visit to the OWL 1-20 mineral claims. The low amount of exposure limits visual prospecting techniques.

7.0 GEOCHEMISTRY

During prospecting in the claims area five water geochemistry samples were taken from active streams draining the property. In addition, in 1976 the Geological Survey of Canada took 20 samples from streams on the property. Samples collected by Pamicon Developments Ltd. were placed in

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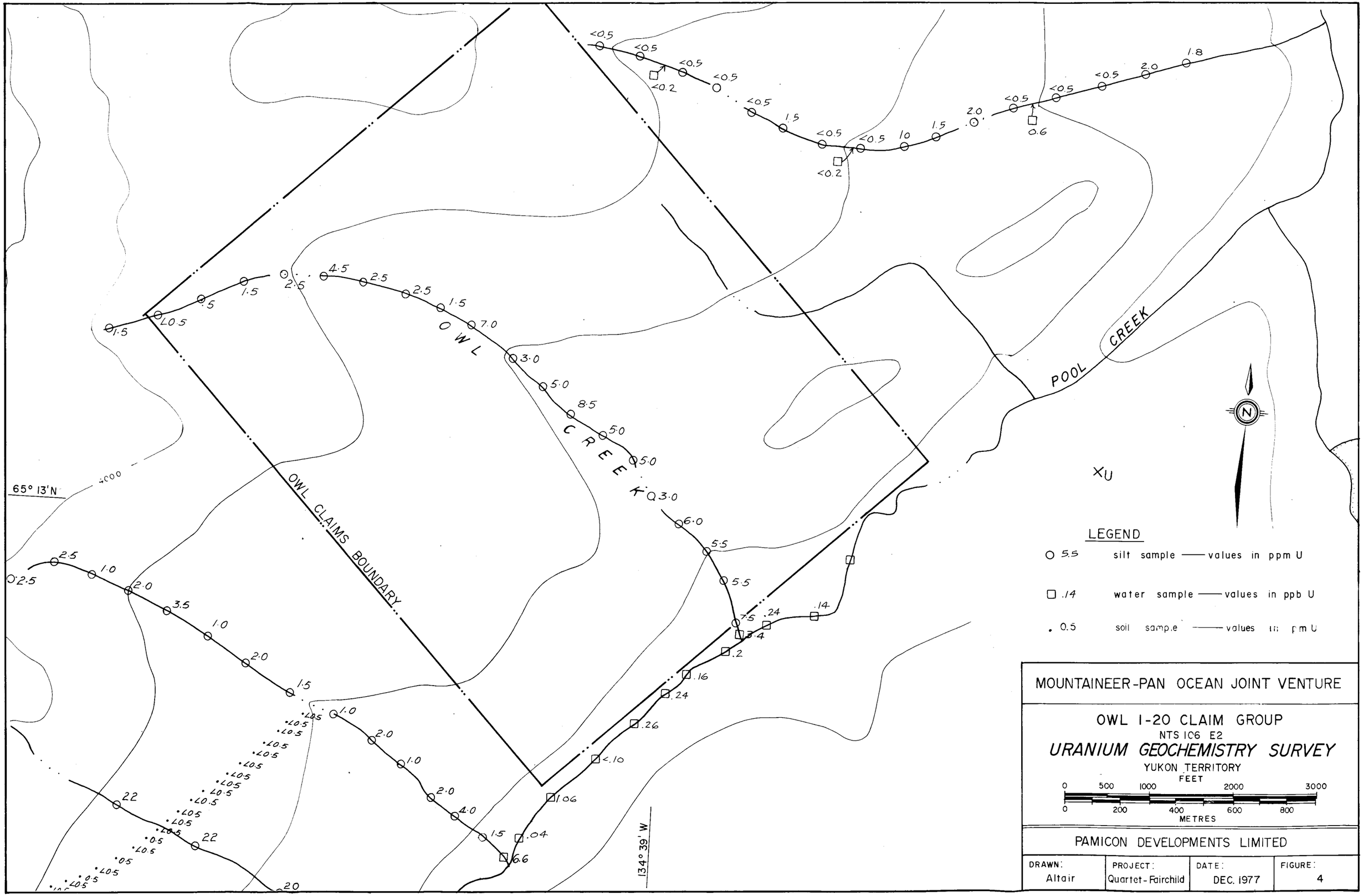

LEGEND

○ 5.5 silt sample —— values in ppm U

□ .14 water sample —— values in ppb U

• 0.5 soil sample —— values in ppm U

MOUNTAINEER-PAN OCEAN JOINT VENTURE

OWL 1-20 CLAIM GROUP

NTS 106 E2

URANIUM GEOCHEMISTRY SURVEY

YUKON TERRITORY

FEET

0 500 1000 2000 3000

0 200 400 600 800

METRES

PAMICON DEVELOPMENTS LIMITED

DRAWN:	PROJECT:	DATE:	FIGURE:
Altair	Quartet-Fairchild	DEC. 1977	4

numbered, acid-cleansed plastic sample bottles. Samples were sent for analysis to Chemex Labs. Ltd. in North Vancouver, B.C. and upon receipt were analysed for uranium using standard fluorometric procedures (see Appendix II for complete descriptions of the procedures used for both water and silt geochemical analysis).

TABLE 7.1 - Water Geochemistry Results

Water Sample Number	Data By:	PPB Uranium
G 001	Pamicon	6.6
G 002	Pamicon	3.4
G 003	Pamicon	1.5
G 006	Pamicon	<.2
G 007	Pamicon	<.2
G 008	Pamicon	0.8
764-354	GSC	1.2
764-355	GSC	1.6
764-356	GSC	N/D
764-357	GSC	1.6
764-358	GSC	11.8
764-359	GSC	2.6
764-360	GSC	2.0
764-393	GSC	0.02
764-394	GSC	0.22
764-395	GSC	0.24
764-396	GSC	0.04
764-398	GSC	0.06

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Table 7.1 cont'd

Water Sample Number	Data By:	PPB Uranium
764-399	GSC	0.10
764-400	GSC	0.26
764-402	GSC	0.24
764-403	GSC	0.16
764-404	GSC	0.2
764-405	GSC	0.24
764-406	GSC	0.14
764-407	GSC	0.04

* GSC data extracted from Open File 388, Ottawa, 1976

TABLE 7.2 - Stream Silt Geochemistry Results

Sample No.	PPM Uranium
G 116	7.5
G 117	5.5
G 118	5.5
G 119	6.0
G 120	3.0
G 121	5.0
G 122	5.0
G 123	8.5
G 124	5.0
G 125	3.0
G 126	7.0
G 127	2.5
G 128	2.0
G 129	4.5

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Table 7.2 cont'd.

Sample No.	PPM Uranium
G 130	2.5
G 131	1.5
G 132	0.5
G 133	<0.5
G 134	1.5
G 145	<0.5
G 146	<0.5
G 147	<0.5
G 148	<0.5
G 149	1.5
G 150	<0.5
G 151	<0.5
G 152	10.0
G 153	1.5
G 154	2.0
G 155	<0.5
G 156	<0.5
G 157	<0.5
G 158	2.0
G 159	1.5

Figure 4 has 34 silt sample locations and values plotted in addition to the water sample data. Stream silts were collected every 500 feet along the watercourses on or adjacent to the OWL 1-20 mineral claims. Silt size sediment

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was placed in numbered, kraft sample envelopes and sent to Chemex Labs. Ltd. in North Vancouver, B.C. for analysis of parts per million uranium.

Both the silt and water geochemical sampling determined anomalous uranium values are present. Water geochemistry on Owl Creek had values of 1.2, 1.6, 1.5, 1.6, 2.6, 2.0 and 3.4 ppb uranium. All results are considered anomalous. One anomalous value of 6.6 ppb uranium from the creek west of the OWL group was recorded. With respect to the silt sampling, Owl Creek results ranged from .5 ppm to 8.5 ppm uranium. These values are considered slightly to moderately anomalous. Values on the creek west of the OWL were all below 5 ppm uranium and to the east only one value of 10 ppm uranium was considered anomalous.

8.0 DISCUSSION AND CONCLUSIONS

The OWL 1-20 mineral claims contain anomalous values of uranium in silt and water samples. The low percentage of outcrop (10%) limits visual exploration methods. A better understanding of the geology of the entire POOL group may lead to specific exploration targets on the OWL 1-20 mineral claims in the future. Overall, the favourable lithologies, structures and geochemistry suggest further work is required on the property.

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9.0 RECOMMENDATIONS

Additional staking has resulted in the OWL 1-20 claims being incorporated into a large claim block held by the Mountaineer Mines Ltd. - Pan Ocean Oil Ltd. joint venture in the Fox Creek area. A program for the entire claim block is proposed and will encompass the additional work warranted on the OWL claims.

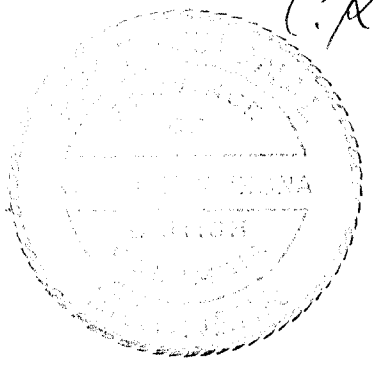
The proposed program includes further detailed geology, prospecting, geochemical sampling, ground radiometrics and possible trenching.

Respectfully submitted

M. Stammers, Geologist

M. S.

C. K. Ikona, P.Eng.



URANIUM

Analytical methods for uranium presently in use at Chemex have been modified from procedures developed by the USGS and GSC. For uranium at PPB and PPM level, fluorometric methods of analyses are highly acceptable in terms of accuracy, cost and turn around time.

The following methods are used extensively to determine uranium potential in a variety of material.

(a) Water Samples - By Fluorescence Analysis

Clean 100 or 200 ml plastic bottles are provided for field use. If a portion of the water is to be stored we require a 200 ml sample.

A 75 ml aliquot is transferred to a clean 100 ml pyrex beaker. 3 ml of concentrated HNO_3 is added and the solution is evaporated to dryness at low uniform temperature. The dry residue after ashing is dissolved in 3 ml of warm 4M HNO_3. An aliquot of the dissolved residue is transferred to a small platinum dish, dried, and fused with an 0.50g tablet of carbonate-fluoride flux at 650° C. The fused disc is removed from the platinum dish and uranium fluorescence is determined using a G. K.Turner III Fluorometer or Jarrell-Ash 26-000 Fluorometer. Detection limit is 0.20 PPB U. Analytical capability approx. 200 samples per day including check samples and quality control standards.

(b). Soil, Silt, Lake Bottom Sediments & Rocks - By Fluorescence Analysis

These materials normally arrive unprepared. Preparation requires drying @ 60° C and screening to obtain the -80 mesh fraction. Coarse material is retained if the screened fraction is small. A 0.25 gm sample of -80 mesh material is weighed into a 100 ml pyrex beaker. The sample is ashed at 550° C to remove organics. The ashed residue is digested in 5 mls 4M HNO_3 and taken to dryness twice. The residue is leached in 50 mls 1% HNO_3. The solution is swirled and allowed to settle. A few microlitres of

. . . .

the clear solution is transferred by micropipette to a platinum dish. The sample is evaporated to dryness and an 0.50 gm tablet of carbonate - fluoride flux is added to the sample dish. Fusion and fluorometric determination of uranium is as described for water samples. Detection limit is 0.50 PPM U. Analytical volume approx. 400 samples per day including duplicates and quality control standards. Upper limit of analytical method - 400 PPM U.

(c). Assay Materials (% U_3O_8) By Colorimetric Methods

1 gram of homogenized sample pulp is weighed into a Teflon dish and digested with 10 mls 52% HF, 5 mls 70% $HClO_4$ and 5 mls conc. HNO_3 to dryness. The residue is dissolved in 25 mls 9M HCl. The uranium is separated from interfering elements by anion exchange procedures. The adsorbed uranium is eluted form the resin and a suitable portion of the uranium bearing solution is reduced, filtered and then complexed using Arsenazo III reagent. Absorbance is measured using "Spectronic 700" Spectrophotometer. The U_3O_8 concentration is evaluated by correlation with a standard reference curve. Analytical volume - 40 samples/day. Concentration range 0.001% U_3O_8 to 10.0% U_3O_8.

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AREA CODE: 604
TELEX: 043-52597

CHEMEX LABS LTD.

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 40288

INVOICE NO. 20759

RECEIVED July 11/77

ANALYSED July 13/77

TO: Pamicon Developments Ltd.
612 - 850 W. Hastings St.
Vancouver, B.C.

ATTN:

WATERS

SAMPLE NO. :	ppb Uranium
C - 108	1.6
F - 007	0.3
G - 001	6.6
002	3.4
003	1.5
004	5.3
005	< 0.2
006	< 0.2
007	< 0.2
008	0.6
009	< 0.2
010	< 0.2
G - 011	< 0.2
DF - 1042	5.6
DF - 1043	1.7
1569	4.4
2527	1.4
2528	< 0.2
6001	1.3
6002	< 0.2

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY:

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 40290
INVOICE NO. 20760
RECEIVED July 11/77
ANALYSED July 13/77

TO: Pamicon Developments Ltd.
612 - 850 W. Hastings St.
Vancouver, B.C.

ATTN: D. Yeager cc: Mayo Y.T.

SAMPLE NO. :		PPM Uranium
SS#G - 143	CLAM	0.5 2
SS#G - 144	CLAM	5.0
G - 101		1.5
102		< 0.5
103		< 0.5
104		1.0
105		2.0
106	REG between OWL & CLAM	3.5
107		1.0
108		2.0
109		1.5
110		1.0
111		2.0
112		1.0
113		2.0
114		4.0
115		1.5
145		< 0.5
146		< 0.5
147		< 0.5
148		< 0.5
149		1.5
150	OWL	< 0.5
151	OWL	< 0.5
152		10
153		1.5 23
154		2.0
155		< 0.5
156		< 0.5
157		< 0.5
158		2.0
159		1.5
160		< 0.5
161	OWL	< 0.5
162	OWL	< 0.5
163		< 0.5
164		< 0.5
165		0.5
166		1.0
G -167		1.5
STD.		19

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CERTIFIED BY: A. P. Chuyer