



MOUNTAINEER MINES LTD. - PAN OCEAN OIL LTD.

JOINT VENTURE

ASSESSMENT REPORT

ON THE

Elk 1-90 Mineral Claims

NTS 106 C/14

⁴69°53'N Latitude, 133°20'W Longitude

Yukon Territory

Report Date:
February, 1981
Report No. 6-81

D.L. Dick
D.B. Harmeson
PAN OCEAN OIL LTD.
Calgary, Alberta

090819

Pan Ocean

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

\$ 4,000.00

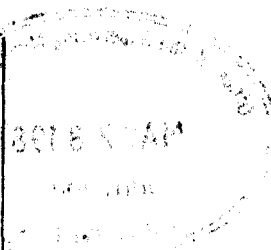
R. Debicki A. Reg. Geol.

Resident Geologist *at June 1/81*
Resident Mining Engineer

Considered as representation work under Section 53 (1) of the Quartz Mining Act.

B. R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory



25/5/81

FROM: Mining Recorder at MAYO

TO: Supervising Mining Recorder at Whitehorse, Y.T.



FOR ACTION ARE:

NEW APPL'N for PLACER LEASE to PROSPECT: Name:

RENEWAL APPL'N PLACER LEASE to PROSPECT: Name:

Lease No.

AFFIDAVIT of EXPENDITURE on PLACER LEASE. Name:

Lease No.

ASSIGNMENT of PLACER LEASE No.

From: To:

GROUPING APPL'N UNDER SEC. 52(2) PLACER MINING ACT.

Owner:

DIAMOND DRILL LOGS:

Claims: Claim sheet no:

QUARTZ ASSESSMENT REPORT:

Claims: ELK 1-90 Claim sheet no. 106-C-14

Type of report:

GEOCHEM; GEO; TRENCHING

Submitted by:

PAN OCEAN OIL

Cls. work performed on:

ELK 32

\$ Req. for ren. application

4000⁰⁰

[Signature]
Signature

REPLY ACTION:

Date Ret.

Signature

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION-----	1
2.0 LIST OF CLAIMS-----	1
3.0 LOCATION AND ACCESS-----	1
Figure 1 - Yukon Location Map-----	2
Figure 2 - Elk Claim Map-----	3
4.0 TOPOGRAPHY AND VEGETATION-----	1
5.0 REGIONAL GEOLOGY-----	4
Figure 3 -Generalized Regional Geology Section-	7
6.0 PROPERTY GEOLOGY-----	8
6.1 Introduction-----	8
6.2 Lithology-----	10
6.3 Stratigraphy and Structure-----	10
6.4 Mineralization-----	11
Figure 4-Preliminary Geology Map	
Elk Claims-----	9
6.5 Geochemistry-----	11
6.6 Geophysics-----	11
7.0 ACTIVITIES, 1980	
7.1 Prospecting and Geology-----	12
7.2 Trenching-----	12

LIST OF APPENDICES

APPENDIX I	Engineer's Certificate
APPENDIX II	List of Personnel
APPENDIX III	Affidavit of Expenditures
APPENDIX IV	Statement of Expenditures
APPENDIX V	Geochemical & Assay Results

LIST OF TABLES

1	Results of Semi-Quantitative Spectrographic Analysis - Elk Trench-----	13
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LIST OF FIGURES

<u>Figure No.</u>	<u>TITLE</u>	<u>Page No.</u>
1	Yukon Location Map - Elk Group-----	2
2	Elk 1-90 Claim Group-----	3
3	Idealized Section showing Regional Correlations and Structural History-----	7
4	Elk 1-90 Mineral Claims - Preliminary Geological Map-----	9

LIST OF DRAWINGS

<u>Drawing No.</u>	<u>TITLE</u>	<u>Location</u>
1 (A-1215)	Plan of Immediate Elk Trench Area-----	in pocket
2 (A-1216)	Elk Trench Plan View-----	in pocket
3 (A-1217)	Elk Trench Face No. 1-----	in pocket

1.0 INTRODUCTION

The ELK 1-90 mineral claims were staked on November 21, 1976 by the Pan Ocean Oil Ltd. - Mountaineer Mines Ltd. joint venture to cover favourable geologic targets within the Quartet/Fairchild mineral belt.

During the period of August, 1980 a trenching program was performed by McCrory Holdings (Yukon) Ltd. personnel under the field supervision of D.L. Dick (Pan Ocean Oil Ltd.)

2.0 LIST OF CLAIMS

<u>Claim Name</u>	<u>Staking Date</u>	<u>Recording Date</u>	<u>Grant No.</u>
Elk 23-36	November 21/76	November 25/76	YA14501-14514
Elk 51-64	November 21/76	November 25/76	YA14529-14542
Elk 79-90	November 21/76	November 25/76	YA14557-14568

3.0 LOCATION AND ACCESS

The ELK claims are located on NTSsheet 106C/14, approximately 188 km northeast of the community of Mayo, Yukon. The approximate co-ordinates of the claim group are 64°53'N latitude, 133°20'W longitude.

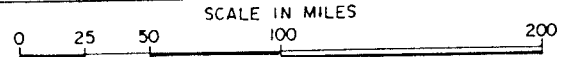
Access to the property is by both fixed-wing aircraft and helicopter. Complete expediting services are available in Mayo. A winter road exists from Elsa to Dolores Creek and Fairchild Lake via Braine Pass.

4.0 TOPOGRAPHY AND VEGETATION

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 Racklan Range, Bonnet Plume Range and Knorr Range. Elevation within the area of investigation ranges from 610 to 1,980 m (3,000 to 6,500 ft) A.S.L. Topography

YUKON LOCATION MAP

Figure 1 ELK GROUP



DRAWN Alfarr	PROJECT	DATE NOV. 1977	FIG. 1
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from document report 78-5

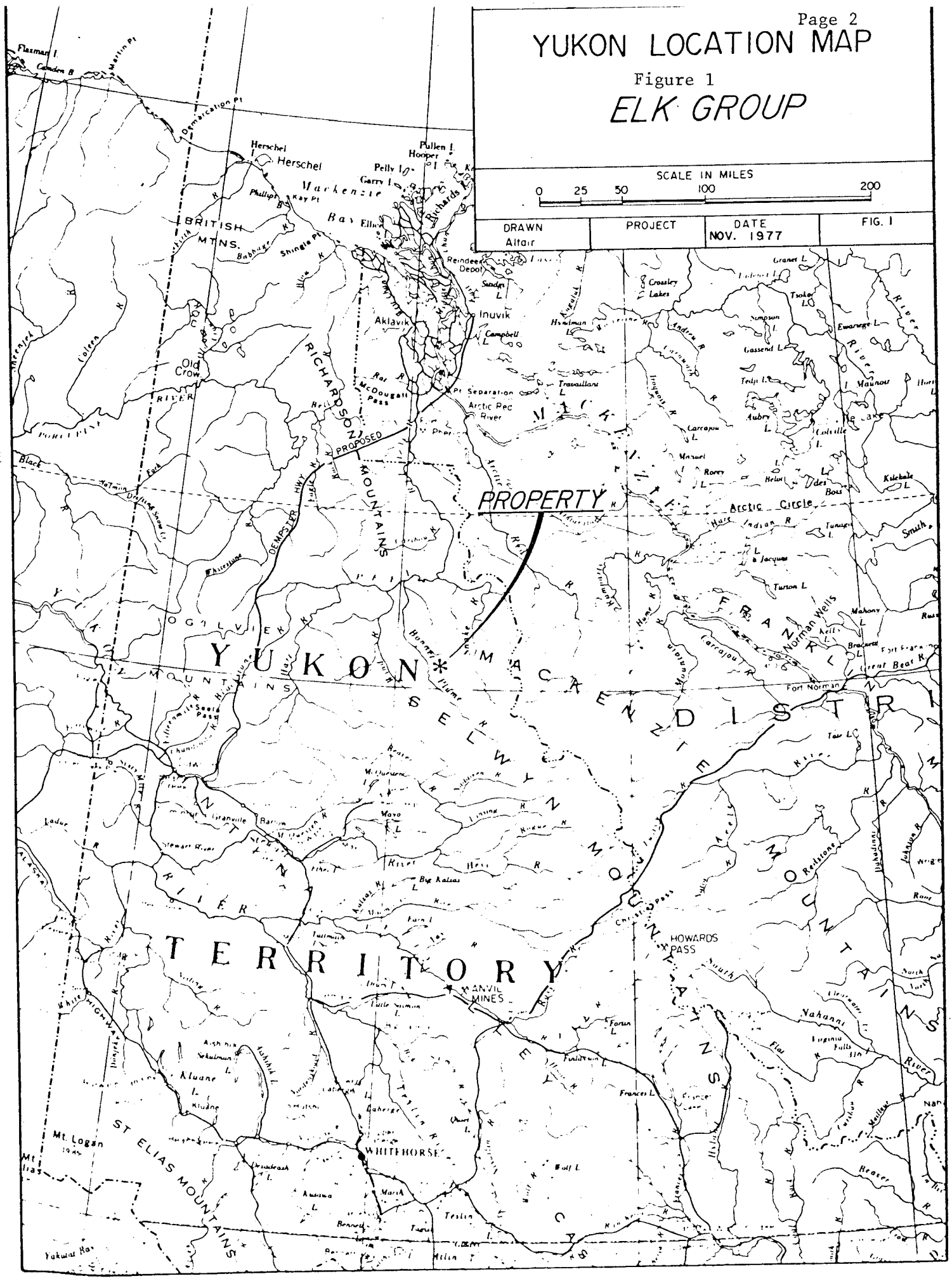
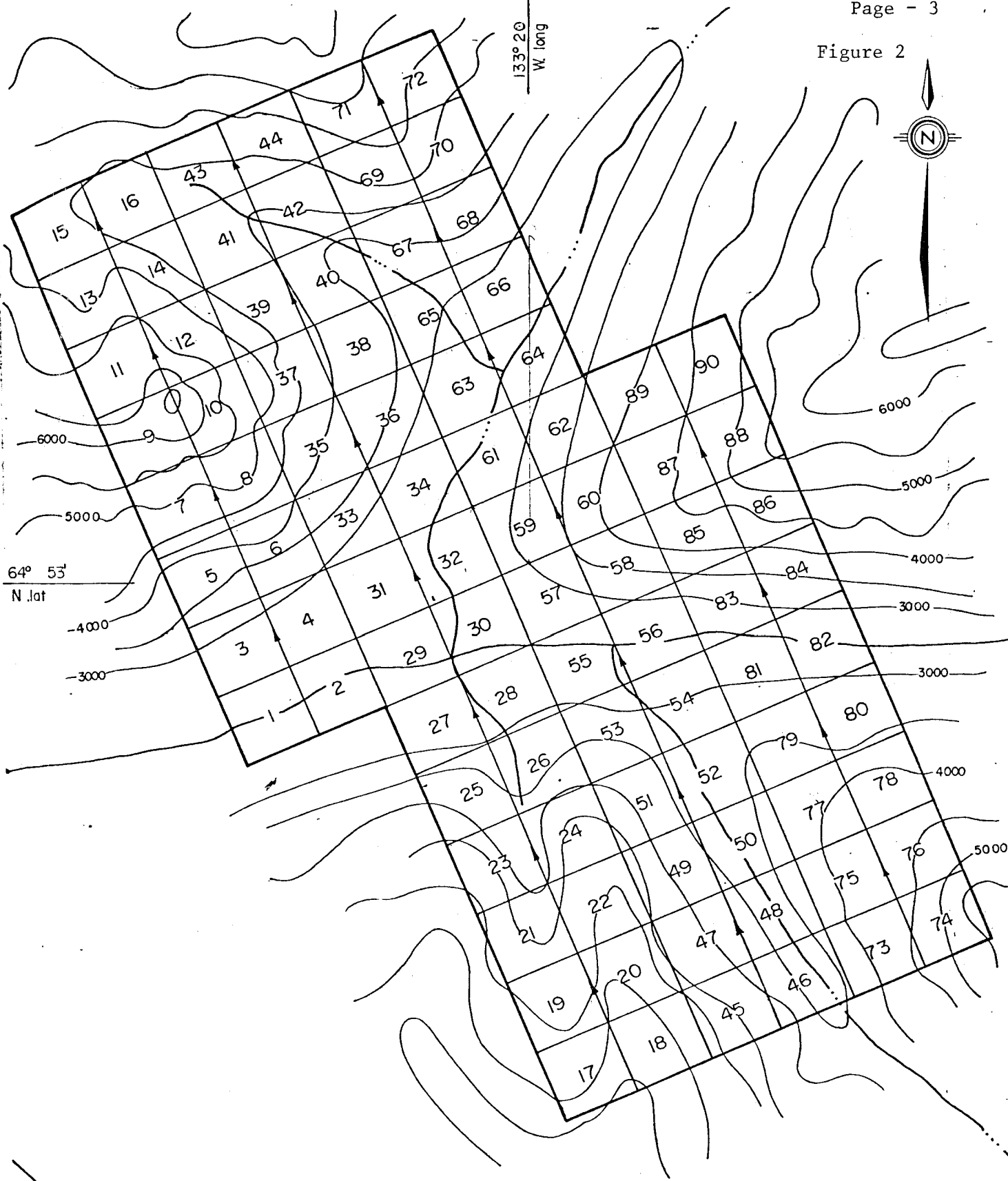


Figure 2



from Area map August 1972.

MOUNTAINEER-PAN OCEAN JOINT VENTURE	
ELK 1-90 CLAIM GROUP DOLORES CREEK AREA 64°53N. & 133°20W.	
SCALE: 1" = 1/2 MILE	NOVEMBER 1977

is extreme in most cases..

The major river valleys are broad, timbered and extensively overburden covered, while most mountain slopes present greater than 60% outcrop above the 1,220m (4,000 ft.) level.

The vegetation throughout the immediate region is composed largely of black spruce and willow thickets at low elevations which give way to dwarf birch, grasses and moss above the 910m level.

5.0 REGIONAL GEOLOGY

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.

- 5.1 Geology of Nash Creek, Larsen Creek and Dawson Map-Area, Yukon Territory by L.H. Green 1972 (Memoir 364).
- 5.2 Open File 205 (Geology of Nadaleen River and Bonnet Plume Lake sheets by S. Blusson), 1975.
- 5.3 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°00'W and latitude 65°00'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.

The area of immediate economic interest lies on the northern half of the Helikian assemblage along a sinuous linear approximately 45km long and 15km wide, following the Kiwi Lake, and Bonnet Plume River drainage system.

About this linear a window of upper Lower Proterozoic rocks is exposed. Extensive exposures of the basement forming succession of moderately metamorphosed and structurally complex fine grained clastic sediments with interbedded carbonates forming Unit A (Fairchild Group) are overlain by the shale-slate-quartzite sequence of Unit B (Quartet Group).

To the south and southwest, Units B and C (Gillespie Group) outcrop within a lobe approximately 20km wide and 30km long with faulted fingers trailing out to the west.

Unit C comprises a sequence of thickly bedded orange weathering dolomites having a basal sequence of transitional beds of alternating buff weathering dolomites and intercalated slates and quartzites.

The conformable relationships within the supergroup are complicated by local uplift and subsidence and by the division of the assemblage into two main blocks as described above. Units A and B are conformable to a high degree north of the Unit B - Unit C contact and Unit B and C are relatively conformable south of this contact. An overturned block of Fairchild Group occurs south of Fairchild Lake.

The Helikian assemblage is regionally bounded by the following unconformable units:

1. To the east, a unit of undivided clastics and carbonates of Hadrynian age overlie Unit C.
2. To the south and west, carbonates of Ordovician-Devonian age

overlie Units B and C.

3. To the north, the Hadrynian sediments directly overlie Unit B.
4. In the upper west region, undivided clastics and carbonates of Cambrian age directly overlie Units A and B and in turn are unconformably overlain by Ordovician-Devonian carbonates.
5. To the north and west, Tertiary and Cretaceous strata of the Bonnet Plume Basin abound.

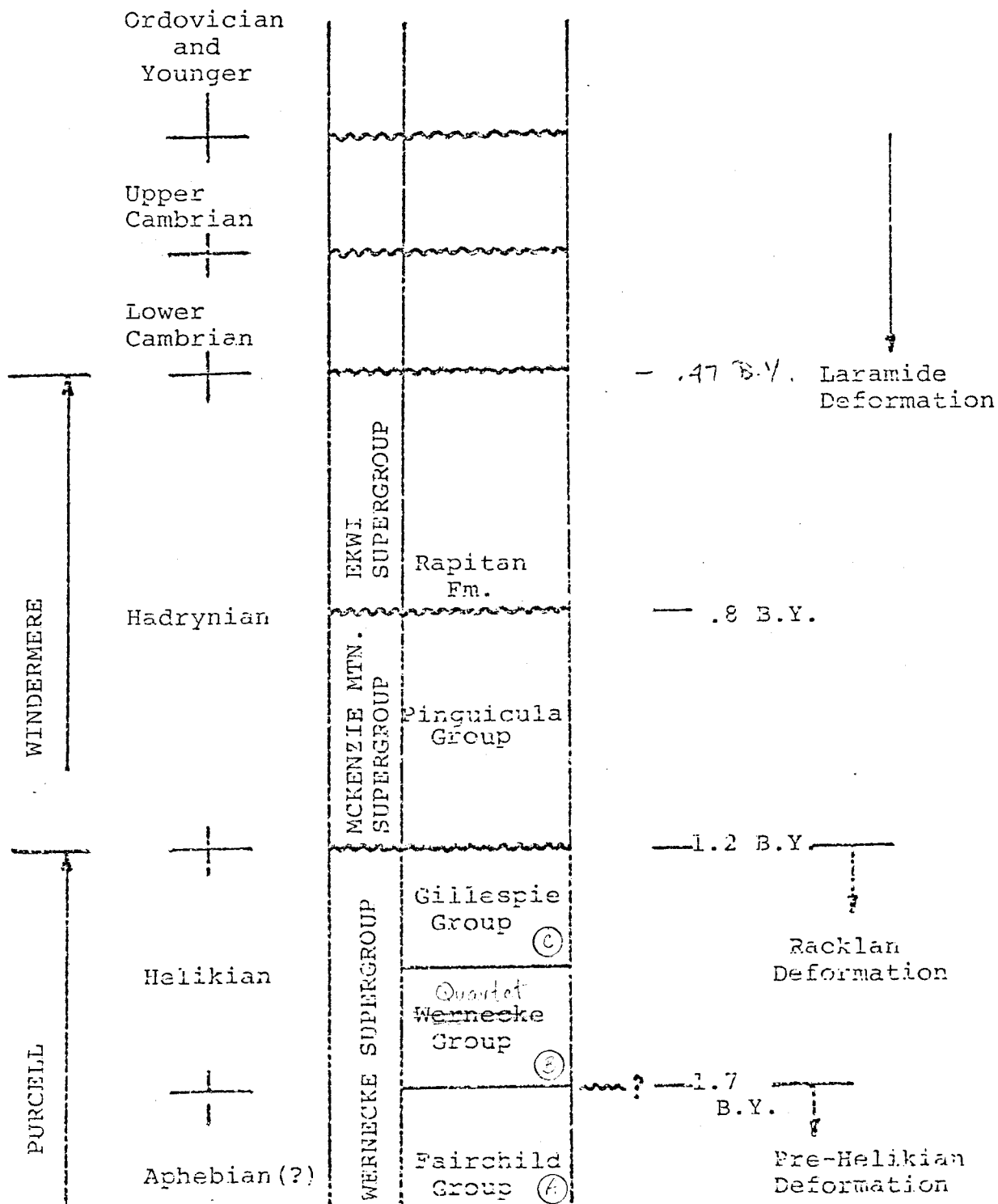
Throughout the Helikian section, local zones of brecciation occur. The presence of contact metamorphic effects along the margins, the common occurrence of country rock clast development, and the apparent transitional gradation of brecciation suggest a structurally controlled diatreme igneous event.

Locally, the breccia zones are of erratic distribution and of variable dimension but overall appear to occur along two arcuate trends north and south of the central sinuous linear in close proximity to or within Unit A. Occasional outcrops of breccia occur north and south of these trends within Units B and C.

Alteration zones exhibiting moderate to intense K-feldspar and/or hematite alteration are common. The intensely hematized breccias have a purplish scintered appearance, whereas the intensely feldspathized breccias have a buff to pink coarse igneous appearance.

Within, immediately adjacent to and following regional trends, fracture controlled occurrences of metallogenically complex sulphide, arsenide, hozone, carbonate, and oxide mineralization of variable intensity occur in relation to the breccia zones. The mineralization includes elements of copper, lead, zinc, gold, silver, tungsten, molybdenum, iron, tin and manganese.

IDEALIZED SECTION SHOWING REGIONAL CORRELATIONS & STRUCTURAL HISTORY



Complex metamorphic regimes involving regional, dynamic, thermal, contact and metasomatic processes are locally imprinted on each other in varying degrees, resulting in widely different alteration and met-allogenic effects.

Intrusive activity involving diabase-diorite dyke development is present within the Helikian section. The diabase-diorite relationship appears to be transitional. Metasomatic alteration in one locality suggest that this development is either earlier or contemporaneous with the regional diatrema event. The location and local metasomatic effects of these dykes are still only sketchy and it may be that there is more than one generation.

At least two major periods of deformation have affected the region. The pre-Hadrynian Racklan deformation moderately deformed the Helikian assemblage resulting in steep to isoclinal folding within the development of axial plane cleavage. A more recent deformation, the Laramide, has resulted in broad gentle folding. Block movement and local thrusting is indicated for both orogenies and a number of minor movements may have taken place. The basement forming Fairchild Group exhibits the most intense deformation and this may be related to an earlier Aphebian event.

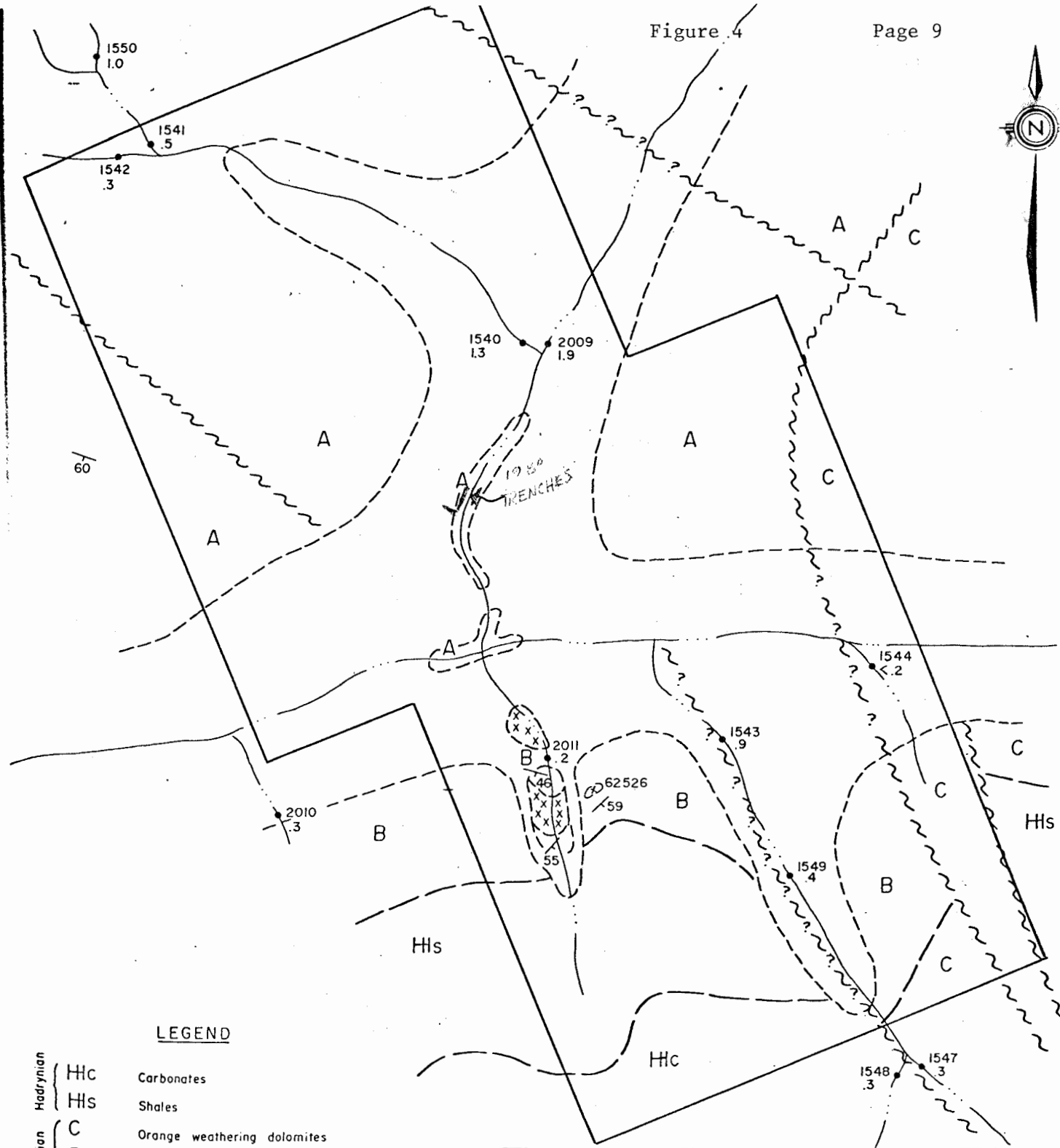
6.0 PROPERTY GEOLOGY

6.1 Introduction

No detailed geologic mapping has been done on the ELK claims, although 1:250,000 mapping was carried out by the Geological Survey of Canada, (Blusson, 1975), and 1:500,000 reconnaissance mapping was done by Pamicon Developments Ltd.



from Assessment Report 75-5.

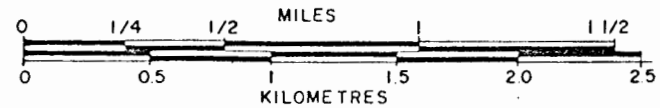


LEGEND

- Hadrynian
 - Hc Carbonates
 - Hs Shales
- Helikian
 - C Orange weathering dolomites
 - B Argillites and shales
 - A Siltstones and carbonates
- (xx) Diatreme breccia
- Geologic contact
- ~~~~ Fault
- - - - - Outcrop limit
- y59 Bedding attitude
- 1547 3 Water sample number
Value in parts per billion uranium

MOUNTAINEER-PAN OCEAN JOINT VENTURE

ELK 1-90 MINERAL CLAIMS
PRELIMINARY GEOLOGICAL MAP
NTS 106 C 14
YUKON TERRITORY



PAMICON DEVELOPMENTS LIMITED

DRAWN Altair	PROJECT Quartet-Fairchild	DATE Nov 80 DEC 1977	FIGURE 1
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2.500 1000000 1000000
1000000

in 1977. A compilation of this work is presented in figure 4 of this report.

6.2 Lithology

Within the area of investigation, the lowermost rocks are Proterozoic sediments which are believed to be Helikian in age. These rocks have been subdivided into Units A, B, and C in figure 4 (Fairchild, Quartet and Gillespie grouped respectively).

The rocks of Unit A are composed mainly of brown to grey weathering siltstones, dolomitic siltstones and silty dolomites. Unit B rocks located in the southern portion of the claim group comprise thick to massive bedded, dark to grey argillites and slates. Unit C, the youngest Proterozoic unit, consists of orange weathering dolomites.

In the southern portion of the property, overlying the Proterozoic section lies a thick sequence of Hadrynian sediments. These have been subdivided into a lower shale unit, consisting of dark brown to black shales containing orange and grey weathering banded dolomites with local limestone interbeds.

Several breccia bodies exist within the claim group. These consist of clasts of grey to pink weathering siltstones suspended in a matrix of dolomites and/or specularite.

6.3 Stratigraphy and Structure

The Unit A siltstone and dolomites are the oldest rocks present on the property. They are usually overlain by the argillites and slates of Unit B.

The younger Hadrynian rocks lie unconformably on the Helikian units. Faulting is the most obvious structural feature in the area of investigation. Most of the faulting trends in a northwest-southeast direction and may represent high angle block faulting.

6.4 Mineralization

Prior to the 1980 summer program, the only known mineralized showing occurs within a small elliptical breccia body in the south-central portion of the claim group. Chalcopyrite and brannerite occur as fine disseminations throughout a weakly-zoned metasomatized siltstone-dolomite-breccia.

6.5 Geochemistry

The reconnaissance geochemical water sampling survey, of 1977, managed to delineate anomalous uranium values within the central portion of the ELK claims.

In 1978, a more detailed geochemical investigation using both waters and soils was initiated. Results of the geochemical sampling indicate the possible presence of additional but hidden breccia bodies as well as the association of anomalous uranium values with spatial relationship to the Hadrynian unconformity, especially in the vicinity of Dolores Creek.

6.6 Geophysics

During 1978 a ground geophysics program was performed employing ground spectrometry and electromagnetics. Results were encouraging in that a number of radiometric and electromagnetic anomalies were located but the grid spacing of control was too large for proper delineation.

7.0 ACTIVITIES, 1980

7.1 Prospecting, Geology

In 1980, prospecting of the immediate area revealed a region northwest of the breccia containing a series of enechelon sulphide-mineralized fractures trending northeast southwest within calcareous-limy siltstones of the Fairchild Group (Unit A).

The sulphides occurred as fine fracture-controlled disseminations of pyrite, chalcopyrite and malachite within the bleached, limy siltstone.

7.2 Trenching

In August, 1980, two trenches, measuring approximately 7m X 3m X 2m each, were excavated. M^CCrory Holdings (Yukon) Ltd. of Whitehorse were contracted to do the work. A two man crew utilized a Jackleghammer, steel explosives and an Atlas Copco XA-50(105CFM) compressor.

The first trench exposed a narrow copper-carbonate vein occurring within a limy, bleached siltstone along a steep creek scarp and following the regional E-W striking, steep southerly dipping trend.

The second trench was cut approximately 10m to the west across the extrapolated strike of the vein. Economic mineralization was not encountered but a narrow bleached alteration zone was partially exposed.

The trenches are located approximately 327m. bearing 052° from Post No. 2, ELK Claims No. 32.

RESULTS OF SEMI-QUANTITATIVE SPECTROGRAPHIC ANALYSIS

ELK TRENCH

No.	#2 86512	#1 86513
Sb	bcl	bcl
As	>5000	1500
Ba	>5000	>5000
Be	bcl	bcl
Bi	5	10
Bo	20	300
Cd	bcl	bcl
Ca	10%	0.7%
Cr	70	100
Co	2000	700
Cu	200	>5000
Ga	bcl	20
Ge	bcl	bcl
In	bcl	bcl
Fe	2%	3%
Pb	5	10
Mg	1%	1%
Mn	1500	500
Mo	<100	<100
Ni	300	300
Nb	bcl	bcl
Ag	bcl	15
Sr	500	500
Te	bcl	bcl
Th	bcl	bcl
Sn	bcl	bcl
Ti	300	1500
V	bcl	100
Zn	bcl	bcl
Zr	20	200

SEMI QUANTITATIVE SPECTROGRAPHIC ANALYSES

>5000 ppm = >5000 ppm	50 ppm = 25-100 ppm
5000 ppm = 2500-10000 ppm	20 ppm = 10-50 ppm
2000 ppm = 1000-4000 ppm	10 ppm = 5-20 ppm
1000 ppm = 500-2000 ppm	5 ppm = 2-10 ppm

500 ppm = 250-1000 ppm	2 ppm = 1-4 ppm
200 ppm = 100-400 ppm	1 ppm = 0.5-2 ppm
100 ppm = 50-200 ppm	bcl = below zero concentration limit

Ranges for iron, calcium and magnesium are reported in %.

DISCUSSION AND RECOMMENDATIONS

In view of the narrow, low grade character of the veins and the discontinuous nature of the mineralization, no further work is recommended on this claim block unless a previously unknown control or mineralization is recognized.

APPENDIX I

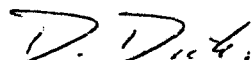
ENGINEER'S CERTIFICATE

ENGINEER'S CERTIFICATE

I, Donald L. Dick, of #11-15 Point Drive N.W., Calgary, in the Province of Alberta, do hereby certify that:

1. I am a graduate of the University of Saskatchewan and hold a B.Sc. degree in Geology.
2. The work reported herein was conducted during a program under my supervision and under the supervision of geologists whom I have confidence in.

Dated this 2 day of April, 1981



Donald L. Dick, B.Sc.

LIST OF PERSONNEL

ELK 23-90 MINERAL CLAIMS
AUGUST 22 - SEPTEMBER 7

Donald Dick P.O. Bag 2533 Station M Calgary, Alberta	Geologist	Sept. 7
George Chabot P.O. Bag 2533 Station M Calgary, Alberta	Geologist	Sept. 7
Dave Yeager 208, 850 West Hastings Street Vancouver, B.C.	Geologist	Aug. 22
Yasu Hashimoto 72 - 12th Avenue Whitehorse, Y.T.	Blaster	Aug. 31, Sept. 1
Gorden Clark 72 - 12th Avenue Whitehorse, Y.T.	Trencher	Aug. 31, Sept. 1

CANADA) In the matter of an evaluation program on the Elk (23-36)
) (51-64) (79-90) Mineral Claims.
 TO WIT) On behalf of PAN OCEAN OIL LTD.

I, David Yeager for Pamicon Developments Ltd., of 208, 850 West Hastings Street, Vancouver, B.C. do solemnly declare that a program consisting of trenching and prospecting was carried out on the Elk Mineral Claims during the period of August 22 to September 7, 1980.

The following expenses were incurred during the course of this work and in the compilation and reporting of the results:

Food	\$ 88.77
Expediting	23.31
Travel and Accommodation	53.51
Camp and Miscellaneous Fuels	34.49
Camp Fixed Wing Support	198.00
Wages	243.75
Helicopter Support	2,388.00
Trenching	<u>1,000.00</u>
TOTAL	<u>\$4,029.83</u>

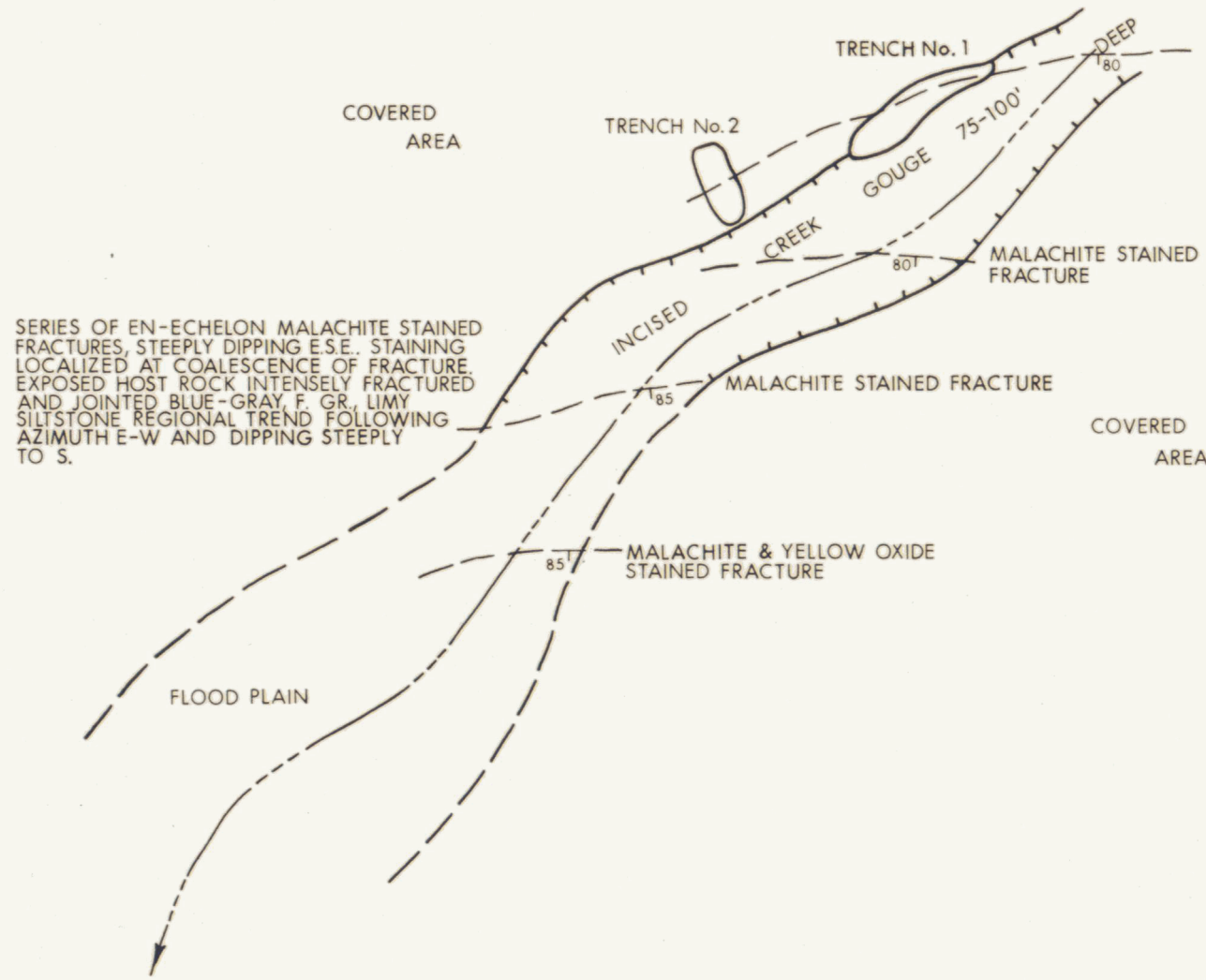
And I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act.

Declared before me at Vancouver in
 the Province of British Columbia this
16 day of April, 1981

} David A. Yeager

H.S. Pihl

A Commissioner for Oaths for
 or Notary Public for the Yukon Territory



----- INTERPRETED TREND OF VEIN
(APPROXIMATELY 050° STRIKE,
082° DIP E.S.E.)

FIGURE 5a



TO ACCOMPANY REPORT NO. 6-81 BY D.L.D & D.B.H.

PAN OCEAN OIL LTD.
CALGARY ALBERTA

PLAN OF IMMEDIATE
ELK TRENCH AREA
FAIRCHILD LAKE PROJECT 1980

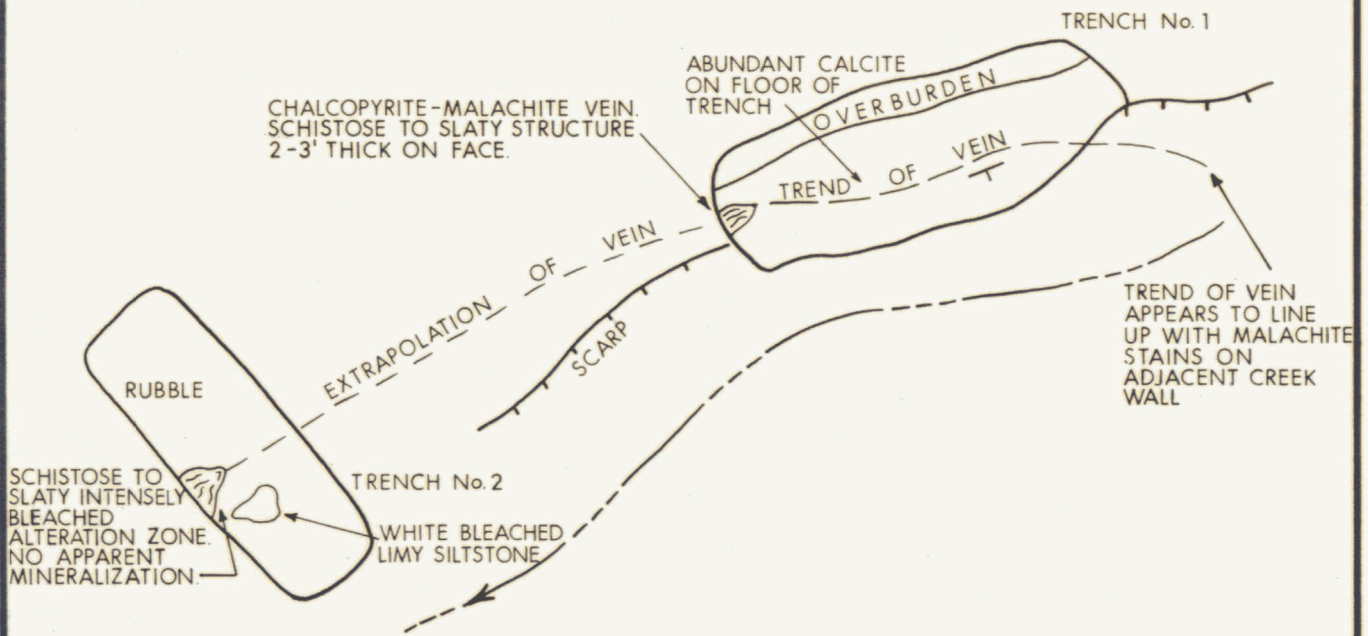
NOTE: LOCATED ON ELK 32 - YA145106

G.E.W.

DATE MARCH, 1981	SCALE 1:600	NTS 106C/14	DRAWING NO. A-1215
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WALL ROCKS OF TRENCH
 COMPRISED OF BLOCKY (6"-8")
 DOLOMITIC OR LIMY SILTSTONE.
 BUFF ALTERED ON JOINT PLANES
 BUT FRESH IN BROKEN ROCK



TO ACCOMPANY REPORT NO. 6-81 BY D.L.D. & D.B.H.

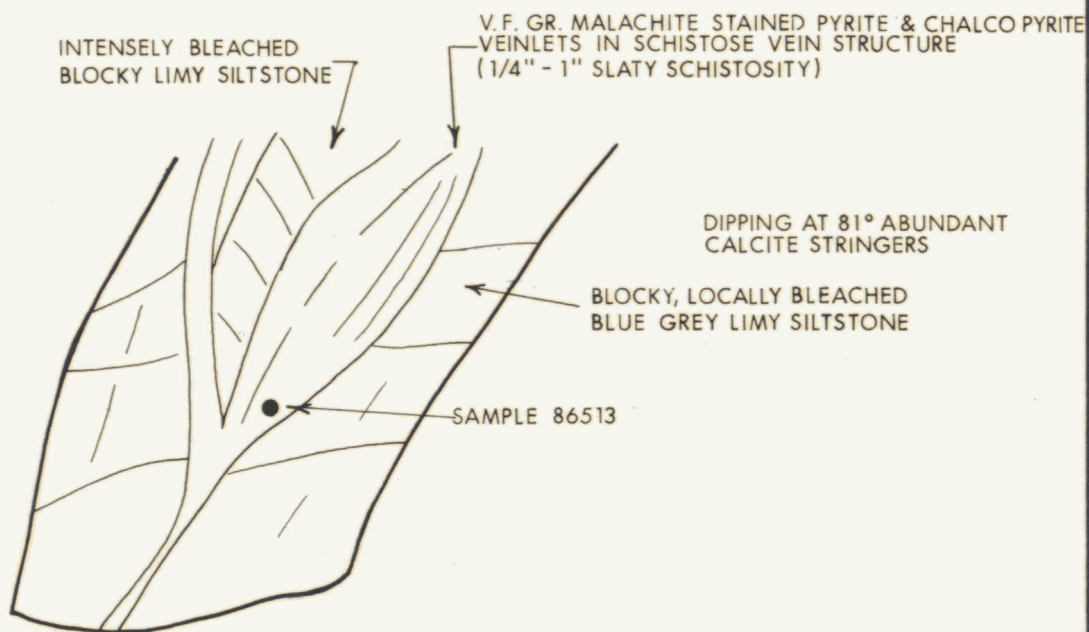
PAN OCEAN OIL LTD.
 CALGARY ALBERTA

ELK TRENCH
 PLAN VIEW
 FAIRCHILD LAKE PROJECT 1980

NOTE: LOCATED ON ELK 32 - YA145106

G.E.W.

DATE MARCH, 1981	SCALE 1:20	NTS 106 C/14	DRAWING NO. A-1216
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TO ACCOMPANY REPORT NO. 6-81 BY D.L.D. & D.B.H.



PAN OCEAN OIL LTD.
CALGARY ALBERTA

ELK TRENCH FACE No. 1

FAIRCHILD LAKE PROJECT 1980

DATE MARCH, 1981	SCALE 1: 30	NTS 106C/14	DRAWING NO. A-1217
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NOTE: LOCATED ON ELK 32 - YA145106

G.E.W.