CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

GEOLOGY, GEOCHEMISTRY and GROUND RADIOMETRICS of the FOX 1 CLAIM

Claim Sheet 92I/2E

Lat.: 50°14'N
Long.: 120°33'W

FOX 1 - TAG # 21764, UNITS 1 - 12

NICOLA MINING DIVISION

British Columbia

by:

J.R. Hill, B.Sc.

Covering Work Completed During the Period: Aug. 5-6, 1979.

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PLANS ACCOMPANYING REPORT

SUMMARY

The FOX 1 Claim was staked in June, 1978 to cover a stream sediment uranium anomaly generated from the original Princeton/ Nicky data. Follow-up stream sediment and water sampling, plus prospecting, was carried out during the summer of 1978. The follow-up work generated values up to 290 ppm U in the sediments of a stream draining the south-central portion of the claim.

Detailed geological mapping, geochemical sampling and a scintillometer survey were completed over the claim by a 5-person crew during the period of August 5-6, 1979. Soil samples were analysed for uranium, while rock chip samples were analysed for uranium and thorium. All work was done at a scale of 1" = 400' (1 cm = 48 m) on 800' (244 m) pace and compass lines.

The area has been shown to be underlain by felsic intrusives belonging to the Early Tertiary interior phase of the Nicola batholith. The most recent survey described the rock as a fairly uniform, medium-grained biotite-(hornblende)-granodiorite with minor, finer-grained, more mafic zones scattered throughout. In outcrop, the unit was highly jointed with rare carbonate-sericite/muscovite veins or quartz-pyrite-muscovite veins. There was no evidence of severe structural deformation. Rock chip samples contained <0.5 to 2.0 ppm U.

Soil samples were collected along the 800' (244 m) lines at 200' (61 m) intervals. Samples ranged in value <0.5 to 26.0 ppm U with a mean value of 1.0 ppm U. Two significant anomalies generated from the soil geochemistry survey corresponded with the

originally anomalous drainage system sampled during the 1978 work. The remainder of the soil anomalies appeared to be totally unrelated to results from previous surveys or to variations in the geology of the area.

A scintillometer survey was carried out on the 800' (244 m) grid with readings recorded every 100' (30 m). All values greater than or equal to 19 c.p.s. were considered anomalous compared to a mean of 15 c.p.s. The majority of the anomalies, defined by the 16 c.p.s. contour, were restricted to the northern two-thirds of the property which contained most of the outcrop.

The original stream sediment anomaly has not satisfactorily been explained, however, no further work on the property has been recommended.

INTRODUCTION

The FOX 1 Claim was staked to cover the headwaters area of at least two streams found to contain anomalous uranium in their sediments from the original Princeton/Nicky Program. Values up to 112 ppm U were found. A total of 12 units were staked on June 9th - 10th, 1978 by Eastern Associates Ltd., of Whitehorse, Y.T.

Follow-up stream sediment, water and heavy mineral sampling, including prospecting, was completed by Canadian Oxy during the summer of 1978. Sediment values up to 290 ppm U were found, with coincident water anomalies, to replicate the original anomaly.

This report will describe the geology of the claims and the results obtained from a detailed soil and rock geochemical

FIGURE 1

LOCATION MAP - FOX CLAIMS

NTS 92I/2E

SCALE: 1: 50,000

sampling survey, and a scintillometer survey completed by Canadian Occidental Petroleum Ltd., Minerals Division, during the period of August 5th - 6th, 1979. The work was done to determine the cause of water and sediment uranium anomalies located in lakes and streams draining the south-central portion of the area.

LOCATION AND ACCESS

The FOX Claim is recorded on claim map 92I/2E in the Nicola Mining Division, British Columbia. The property is located 22 km NE of the town of Merritt, to the north of Nicola Lake, at the eastern end of Pleasant Valley.

Access is via the Mill Creek Road from Highway 5, running north from the village of Nicola. The road generally follows Clapperton Creek and a pipeline to the Pleasant Valley, at which point the road turns eastward and continues to follow the pipeline along the bottom of the valley, through the center of the area. The FOX Claim covers a portion of the north side of Pleasant Valley.

VEGETATION

The entire area lies below the tree-line and is covered with open pine and spruce forest. There is little underbrush or deadfall. A small swampy meadow lies in the valley bottom and drains east to southeastwardly.

PREVIOUS WORK

During the original Princeton/Nicky Program in 1973-74, a total of 8 stream sediment samples were collected from the immediate and surrounding area covered by the FOX 1 Claim. The samples ranged in value from 3.7 to 112 ppm U, with a background of approximately 7 ppm U. On this information, the FOX 1 Claim was staked on June 9th - 10th, 1978.

Follow-up geochemical sampling of streams draining the FOX Claims and the surrounding area, was carried out on July 6th and September 12th - 13th, 1978. From the area bounded by the FOX Claims, samples were collected from the main east and south-east flowing stream in the south. Stream and lake sediment values up to 290 ppm U were recorded, while stream and lake water samples were found to contain up to 8.1 ppb U. In all, a total of 44 sediments and 23 water samples were collected. Generally, sediment samples ranged <0.5 to 340 ppm U with a background of 10 ppm U, while water values ranged <0.2 to 8.1 ppb U with a background of 2.0 ppb U. The area was also prospected with scintillometers and a total of 12 rock chip samples were collected for geochemical analysis. The rock samples contained from <0.5 - 1.0 ppm U.

Detailed results from the follow-up geochemical work completed last summer, are contained in the report "Geology and Geochemistry of the FOX Claim Group, J.R. Hill, November, 1978".

WORK COMPLETED

Line Cutting

The boundary lines of the FOX 1 Claim were chained and picketted to form the base grid for the property. The western N-S trending claim line was used as a baseline, while the eastern claim line formed TL 45E. The northern boundary line was chained as L00, while the southern, E-W trending claim line formed L64S. A total of 4.2 miles (6.7 km) of line was chained by Futura Developments Ltd., on August 6th, 1979.

Intermediate E-W cross-lines were paced and compassed from the baseline at 800' (244 m) intervals. A total of 6.0 miles (9.6 km) of line was flagged by various members of the Canadian Occidental crew as part of the soil sampling and scintillometer surveys.

Geological Mapping

Geological mapping of the FOX Claim was completed on the 800' (244 m) lines by J.R. Hill and E.F. Parry on August 5th and 6th, 1979, in conjunction with the geochemistry and ground radiometrics surveys. A total of 10.2 miles (16.3 km) of line was mapped, at a scale of 1" = 400' (1 cm = 48 m) to cover an area of 1.1 square miles (2.8 sq. km).

Geochemical Survey

Soil sampling was completed on the 800' (244 m) lines by J. Bracken, G. Rahme and T. Van Wiechen on August 5th and 6th, 1979. A total of 268 soil samples were collected at 200'

(61 m) intervals on the 800' lines, with 11 samples collected from a soil pit. A total of 22 rock chip samples were collected from outcrops at 1000' (305 m) intervals along the lines. Chemex Labs Ltd., of Vancouver, completed 301 determinations for uranium and 22 determinations for thorium.

Scintillometer Survey

A scintillometer survey was carried out on the 800' (244 m) grid lines, in conjunction with the soil sampling. Readings were recorded at 100' (30 m) intervals using an URTEC UG-130 scintillometer on the TC2 at 10 sec. channel. The work was completed by J. Bracken, G. Rahme and T. Van Wiechen. A total of 503 readings were recorded over 10.2 line miles (16.3 line km).

Names and Addresses of Personnel

J.R. Hill	Party Chief	Canadian Occidental Petroleum 311 - 215 Carlingview Dr., Rexdale, Ontario
E.F. Parry	Senior Assistant	"
J. Bracken	Junior Assistant	"
G. Rahme	Junior Assistant	"
T. Van Wiechen	Junior Assistant	"

PHYSIOGRAPHY

Relief over the area is 800' (244 m). An E-W trending valley at 3800' (1159 m) a.s.l., extending through the southern portion of the claims rises in the north to a small, isolated plateau defined by the 4500' (1372 m) contour. The southern valley drains both to the west into Pleasant Valley, and to the east into Nicola Lake. Stream valleys, especially the N-S trending valley which parallels the eastern boundary of the property, are usually deeply cut with steep, rock-walled sides. The dominantly south-facing slope of the property is only moderately steep with a 15% grade.

GEOLOGY AND ROCK GEOCHEMISTRY

Introduction

The area has been shown to be underlain by felsic intrusives belonging to the Early Tertiary (Paleocene) interior phase of the Nicola batholith (Preto et al. 1979). The rock is fairly uniform in composition and can generally be described as a uniformly medium-grained, equigranular, biotite-(hornblende)-granodiorite. The northern half of the property contains the majority of the outcrop (up to 10%).

Models of uranium mineralization in such a "granitic" environment could include: 1) intragranitic veins associated with the deuteric phase of a granitic intrusion; 2) porphyry uranium mineralization found in granitoids; or 3) deposits of uranium located within fault and shear zones as a result of deep leaching of granitoids.

General Geology

The dominant rock-type underlying the FOX Claims has been described as a uniformly medium-grained, fresh, equigranular biotite-hornblende-granodiorite. There was a tendency for the unit to locally grade into finer-grained, more mafic-rich zones. However, the mafic zones have never been seen contacting with the granodiorite, so their exact structural and age relationships have been difficult to determine. They quite probably represent large xenoliths. The granodiorite was generally unaltered, but was highly jointed. Joints were rarely filled with carbonate-sericite/muscovite veins or quartz-pyrite-muscovite veins. There was no evidence of severe structural deformation.

Description of the Rock Units

The biotite-hornblende-granodiorite is compositionally quite uniform over the entire property. Abundant tabular subhedra of plagioclase, surrounded by interstitial anhedra of quartz and K-feldspar, and scattered crystal of hornblende and biotite are common. The average grain size is 2 - 4 mm.

Plagioclase is the predominant constituent, present as medium-grained subhedra to euhedra in quantities up to 50%. K-feldspar makes up 10 - 15% of the rock occurring as finer-grained, interstitial anhedra, while quartz occurs in quantities up to 20%. Mafic minerals constitute 15 - 20% and are dominated approximately 2:1 by biotite over hornblende. Biotite forms compact anhedra to subhedra which may be 1 - 4 mm across; and hornblende forms prismatic subhedra to compact anhedra up to 5 mm across. Accessory minerals include sphene, apatite and magnetite.

The unit is generally very fresh, but plagioclase may be slightly sericitized and biotite is very rarely replaced by chlorite. Fracture sets are commonly present as flat-lying, "bedding" joints which may be filled with quartz, pyrite or muscovite.

The granodiorite commonly contains xenoliths of variable size, often up to 2000 ft.^{2} (186 m^2), which are composed of what may be an earlier, or a contact, dioritic magma phase of the intrusive. The dioritic material is generally fine to very fine-grained, composed of up to 40% mafics dominated by hornblende, with the rest being plagioclase, and <5% K-feldspar.

The granodiorite was characterized in outcrop by a scintillometer response which averaged 18 c.p.s. The contact zone between the zenoliths and the host intrusion often displayed a scintillometer response of up to 27 c.p.s. (all readings were taken using an URTEC UG-130 scintillometer, on the TC2 at 10 sec. channel).

Alteration and Structure:

Little evidence of major alteration activity was observed in the biotite-hornblende granodiorite. Minor alteration of the plagioclase to sericite, and of the biotite to chlorite was noticed in thin-sections. There was little evidence that the unit had been highly weathered. In fact, outcrops were competent, "non-crumbly", and fresh looking, with little hematite or limonite staining.

There was, however, evidence of some degree of post-emplacement hydrothermal activity. Minor carbonate - sericite/muscovite and quartz-pyrite-muscovite material was observed filling flat-lying fractures in isolated outcrops near the top of the claims. Veins 1 - 2 cm in width were traced for up to 15 m along strike (approximately N-S). However, their occurrence was not common, and they do not appear to represent any major mineralization event. In fact, no evidence of activity which may have lead to the release of uranium through either late stage deuteric alteration of the intrusion or later surface weathering processes, were observed.

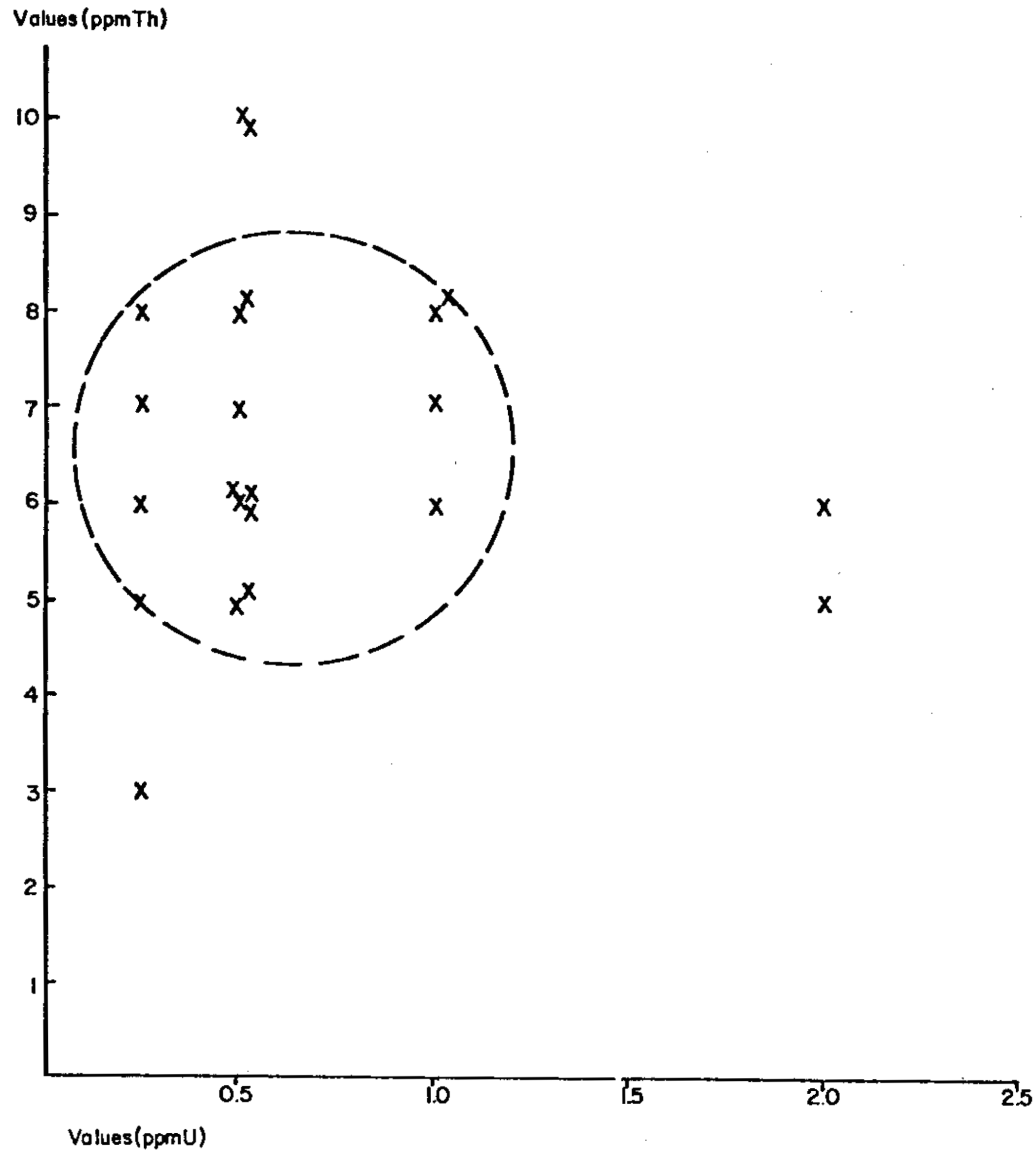
Economic Geology

Visible uranium mineralization was not observed in any outcrops on the property. Analysis of rock chip samples collected during a systematic sampling survey of the FOX rocks showed a range of <0.5 - 2.0 ppm U, and a mean of 0.5 ppm U. The samples were analysed for thorium as well (using neutron activation). Samples ranged in value 3 - 10 ppm Th, with a mean of just above 6 ppm Th. The locations of all 23 rock chip samples collected during the survey have been shown on PLAN 1, along with their corresponding uranium and thorium values. Lab results, including the U/Th ratio for each rock chip sample, have been listed in Appendix IV.

A scattergram of U vs. Th in FOX rocks (Fig. 2), showed a very strong grouping of the majority of the samples about 0.5 ppm U and 7 ppm Th, which supported the observation of only one major rock-type on the property. Two chip samples which contain comparatively anomalous quantities of uranium (2.0 ppm U) originated from outcrops near the top of the claims which displayed the quartz-pyrite-muscovite and carbonate-muscovite/sericite veining. Again, no evidence of a uranium mineralization event was observed.

FIG.2

SCATTERGRAM OF URANIUM vs. THORIUM IN FOX ROCKS



SOIL GEOCHEMISTRY

Soil Development

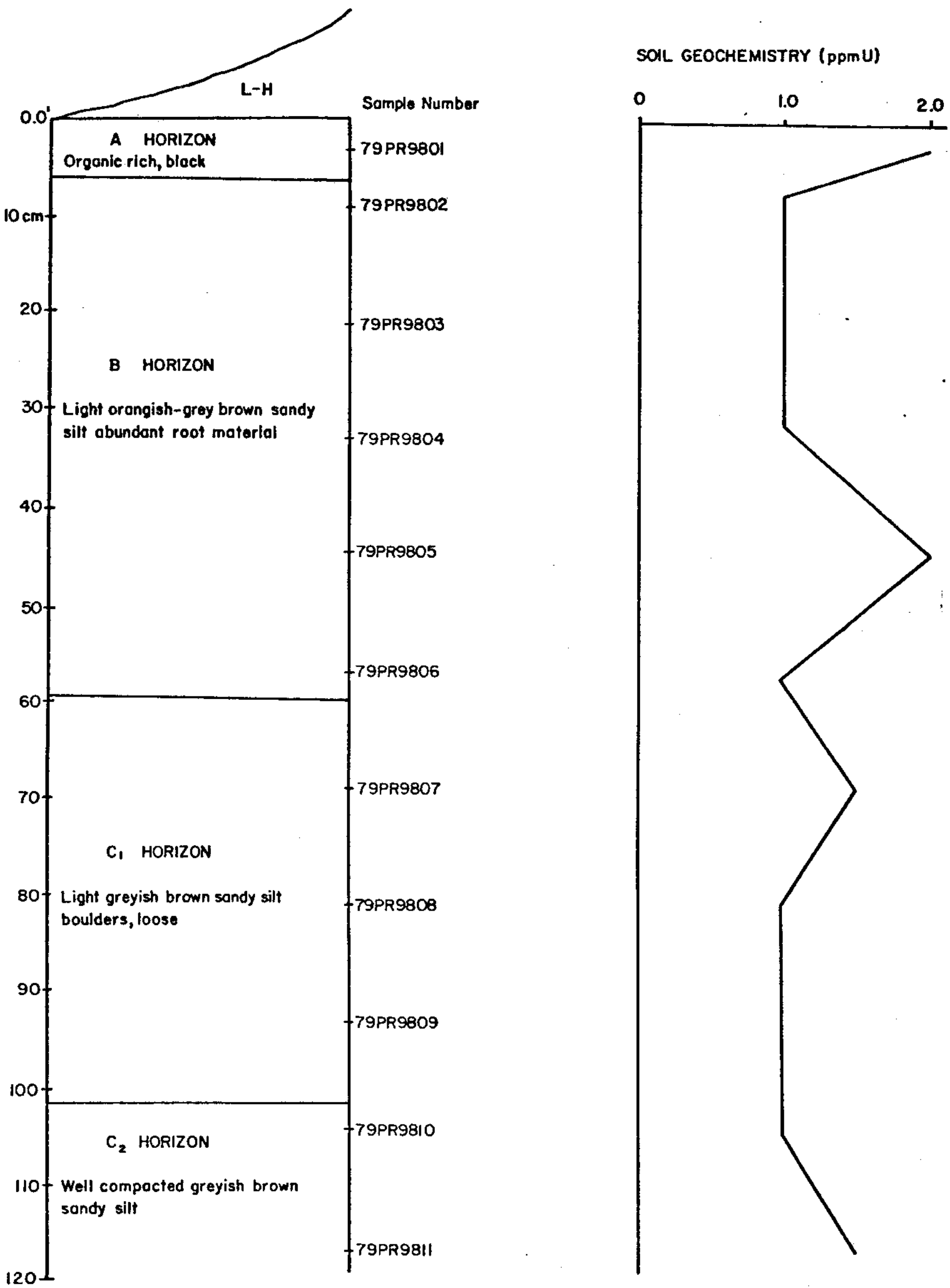
The majority of the FOX area was found to be underlain by soils displaying horizon development characteristic of a brown forest soil. All soils on the property, with the exception of the small, swampy area in the south-central part of the claims, have developed in well-drained environments within a parent material of glacial origin.

Typical soil development was examined in a pit dug on the south end of the property (see Fig. 3). The profile consisted of a 5 cm thick black A-horizon, highly organic, consisting of decaying forest litter. A well developed B-horizon, approximately 55 cm in thickness, immediately underlay the "A" and consisted of a light, orangish-grey to brown, sandy silt with abundant root material. The C-horizon consisted of an upper layer, 40 cm in thickness, composed of a loosely packed, light greyish-brown bouldery, sandy silt, which may represent an ablation till; while immediately underlying this C-horizon was a well-compacted, greyish-brown sandy silt, quite possibly representing a lodgement till.

Samples collected at regular intervals through the profile, were analysed for uranium. The samples ranged in value from 1 - 2 ppm U. The highest values of 2 ppm U were obtained from the A-horizon, as well as from the B-horizon, at a depth of 45 cm. However, for practical purposes, all soil samples were collected from a depth of 10-15 cm below ground level, well within the B-horizon.

FIG. 3

FOX: SOIL PROFILE: L66S/28E



Sampling Procedures

The sampling area was covered by lines at 800' (244 m) intervals extending east from the N-S trending baseline. The lines were compassed, chained and flagged by members of the Canadian Oxy crew, and soil samples were collected along the grid lines at 200' (61 m) spacing.

All soil samples were stored in special, heavy-duty, prenumbered kraft envelopes, semi-dried in the field, and sent to Chemex Labs Ltd., Vancouver, for uranium analysis.

Laboratory Procedures

See Appendix I.

Standard Samples

To check the reproducibility and quality of the analytical work, standard samples were sent to the lab as part of each regular shipment. From the pre-numbered sequence of sample envelopes, 5 out of every 100 were set aside to be filled with the standard material. A moderately high uranium content standard was taken from the B-horizon of a soil pit located in a known, anomalously-enriched area. The material was made as homogeneous as possible and put in the standard envelopes.

The analytical results for the standard samples and their reproducibility are listed in TABLE 1, on the following page.

TABLE 1: REPRODUCIBILITY OF FOX STANDARD SAMPLES

Sample No.	Value (ppm U)	% Variance from Mean
79PR09011	6.0	20
9033	6.0	20
9059	NSS	-
9079	1.5	70
9096	6.0	20
9114	6.5	30
9132	4.5	10
9147	5.0	0
9170	6.0	20
9209	4.0	20
9228	5.0	0
9245	5.0	0
9304	5.0	0
Mean =	5.0	

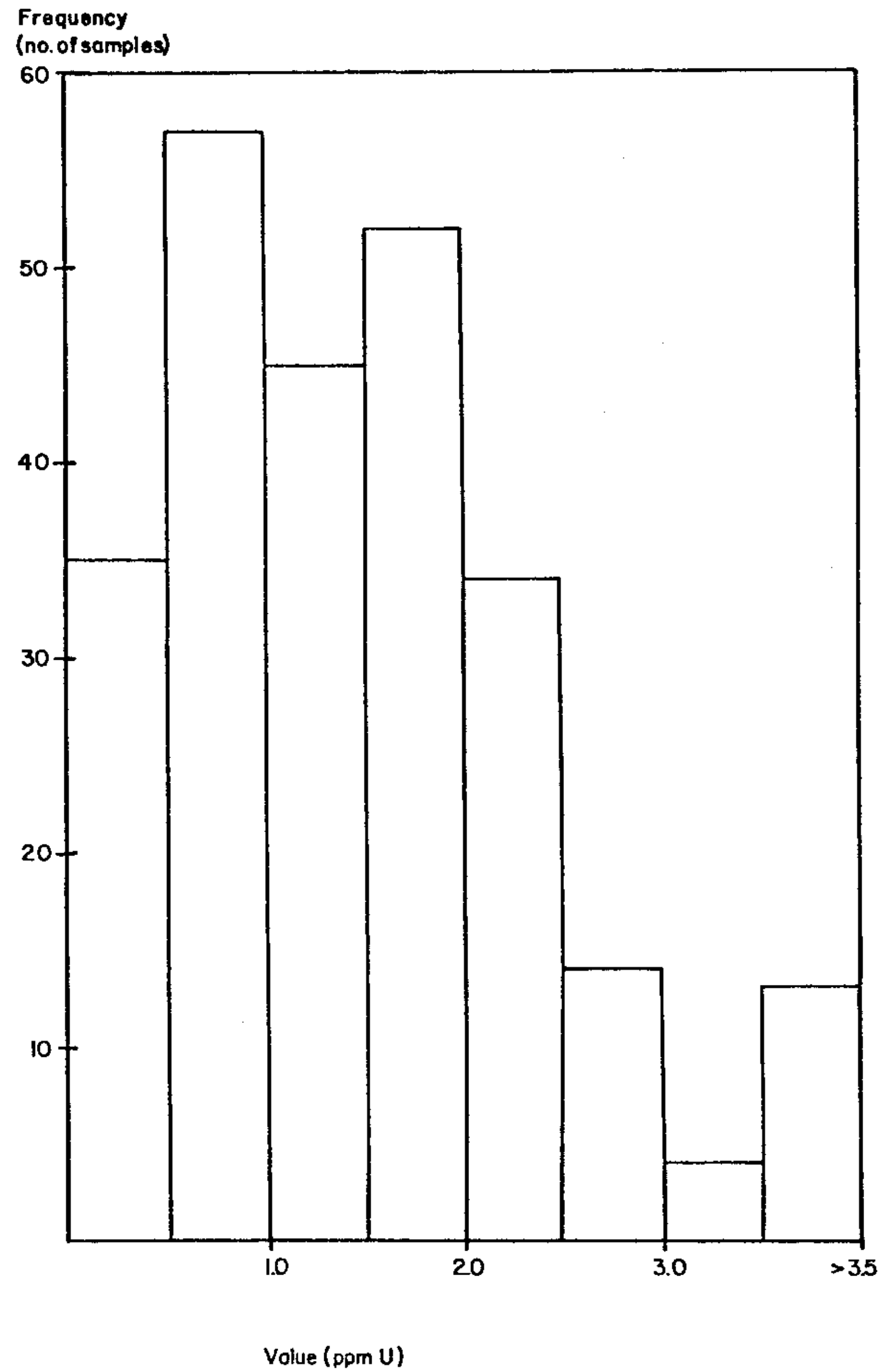
Generally, the accepted figures for reproducibility of results in applied geochemistry are 30% for values 1 - 10 ppm, 20% for 10 - 50 ppm, and 30% for +50 ppm. Therefore, except for one sample, the FOX standards are in accordance with the acceptable figures for their range of values.

Statistical Treatment of Results

To determine mean and anomalous values for uranium, the element values obtained from the laboratory (Appendix III) were grouped into fixed ranges (Table 2 in Appendix II). A histogram of the frequency distribution was constructed (Figure 4), and an

FIG. 4

FREQUENCY DISTRIBUTION OF URANIUM IN FOX SOILS



arbitrary best-fit curve was drawn through the majority of the data. Where this curve intersected the abscissa, defined the cut-off for the "normal" or background population, and thus, all values lying to the right of the cut-off were considered anomalous.

From Figure 4, the frequency distribution of uranium in FOX soils tends towards log normality with a slightly bimodal trend. However, a background mean of approximately 1.0 ppm U can be defined, with a cut-off at just below 2.5 ppm U. Therefore, all values greater than or equal to 2.5 ppm U are considered anomalous.

Results of the Soil Sampling Survey

Lab results for the soil samples were plotted on PLAN 2. Values ranged from <0.5 to 26 ppm U. On the Plan, a completely filled northwest quadrant of the sample station symbol represents an anomalous value. The lab results were contoured to better delineate the areas of interest, using a contour interval of 1 - 2 - 4 ppm U (PLAN 3).

Discussion of Anomalies

Based on the 4 ppm U contour (4 X background), 4 single-point and 4 double-point anomalies have been defined. The highest single anomaly centered about 26 ppm U, and corresponded with the originally anomalous swamp sampled during the 1978 survey. As well, the second highest soil value (24 ppm U) originated from within this same swampy valley. Otherwise, the remainder of the soil anomalies never exceed 8.5 ppm U, and appear to be totally unrelated to results from previous surveys, or to variations in the geology of the area.

SCINTILLOMETER SURVEY

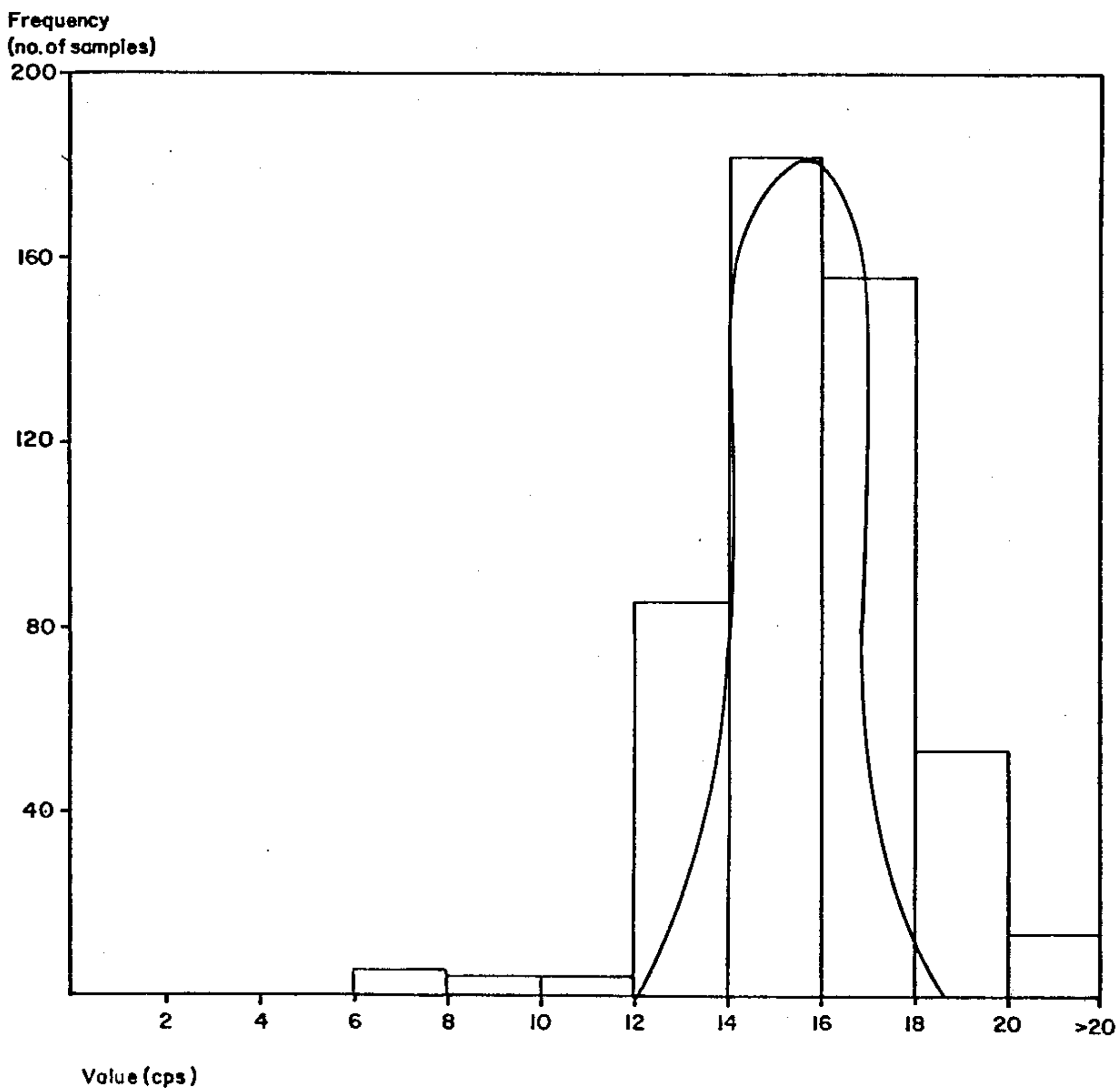
A ground radiometric survey was conducted on the 800' (244 m) grid, in conjunction with the soil sampling program. Readings of total background radiation were recorded at 100' (30 m) intervals along the lines, using a hand-held URTEC UG 130 scintillometer set on the TC2 channel, from a height of approximately 1 m above ground level. The TC2 channel measured all energies above 0.40 MeV over an integrating time of 10 seconds.

PLAN 4 shows the contoured scintillometer results. To determine mean and anomalous values, the readings were first grouped into fixed ranges (Table 3 in Appendix II), and a histogram of the frequency distribution was constructed (Fig. 5). An arbitrary best-fit curve was drawn through the majority of the data, and where this curve intersected the abscissa defined the cut-off for the "normal" or background population. All values lying to the right of the cut-off were considered anomalous. From Fig. 5, the cut-off for the FOX scint data was just greater than 18 c.p.s., therefore, all values greater than or equal to 19 c.p.s. were considered anomalous, compared to a mean value of 15 c.p.s.

The values are slightly lower than has been found characteristic of other "granitic" environments. The majority of the higher level anomalies (defined by the 16 c.p.s. contour) are restricted to the northern two-thirds of the property, which

FIG.5

FREQUENCY DISTRIBUTION OF FOX SCINTILLOMETER RESULTS



contains most of the outcrop. The anomalies do not seem to be related to any variations in the structure or composition of the granodiorite as observed in outcrop. The dominant N-S trend of the contours appear to be more a result of sample spacing bias along E-W trending lines, than a reflection of some influencing geological factor.

CONCLUSIONS AND RECOMMENDATIONS

An examination of the compilation map (PLAN 5) provides a summary of the data collected to-date, from the FOX property.

Soil geochemistry anomalies, defined by the 4.0 ppm U contour, for the most part, have reproduced the original stream geochemistry results, which showed that the southern stream and swampy valley contained anomalous uranium in waters and sediments. The remainder single and double-point anomalies, none of which are greater than 8.5 ppm U, are randomly scattered over the property with no apparent relationship to the geology or physiography of the area.

Scintillometer anomalies, defined by the 18 c.p.s. contour, are scattered over the property, but appear to be more common and of a higher level within areas of outcrop of the biotite-granodiorite. Otherwise, the anomalies are totally unrelated to variations in the geology of the underlying rock, or to any of the soil anomalies.

The original stream sediment anomaly has not been satisfactorily explained. It is probably a result of the natural accumulation of background quantities of uranium in a chemically suitable surficial environment. However, no further work is recommended on the FOX claims, and they should be allowed to lapse.

Respectfully submitted,

Johannes R. Hill

Toronto, Ontario

January, 1980

REFERENCES

Preto, V.A., Osatenko, M.J., McMillan, W.J., Armstrong, R.L. 1979 - Isotopic dates and strontium isotopic ratios for plutonic and volcanic rocks in the Quesnel Trough and Nicola Belt, south-central British Columbia. Can. J. Earth Sci., 16, pp. 1658 - 1652.

APPENDIX I

LABORATORY PROCEDURES

Appendix I - Laboratory Procedures

1. Soil Samples

Samples are sorted and dried at 50°C for approximately two hours. The dried material is passed through a -80 mesh (177 micron) screen; fine material is retained for analysis and coarser material discarded.

2. Rock Samples

The entire sample is crushed. If necessary (> 250 gm), the sample is split on a Jones splitter, the reject being retained for a short period. The split fraction is pulverized such that 90% passes a 200 mesh (74 micron) sieve.

3. Geochem Procedures

A). Uranium (Fluorometric)

A 1-gram sample of -80 mesh soil or -200 mesh rock is digested with hot $HClO_4$ - HNO_3 to strong fumes of $HClO_4$ for approximately 2 hours. The digest is cooled, diluted to volume and mixed.

An aliquot is extracted into methyl isobutyl ketone (MIBK) with the aid of an aluminum nitrate-tetrapropyl ammonium hydroxide salting solution. The uranium in the MIBK is determined by evaporating a portion of the MIBK in a platinum dish and fusing with a mixture of Na_2CO_3 - K_2CO_3 - NaF. The fluorescence of the fused flux is measured to determine the uranium content.

Detection limit is 0.5 ppm.

Appendix I a - Laboratory Procedures (Cont'd.)

B). Thorium (Neutron Activation)

A 1-gram sample of -80 mesh soil or -200 mesh rock material is weighed into a polyethelene vial and heat sealed. Samples, along with standards, are then irradiated for sufficient periods to receive a neutron dose of 1 - 3 X $10^{15}/CM^2$. Following irradiation, samples are cooled for at least one week and thorium is determined by the measurement of its characteristic gamma ray using a semiconductor (Ge/Li) detector.

Detection limit is 1 ppm.

APPENDIX II

TABLES

TABLE 2: Frequency Distribution of Uranium in FOX Soils

INTERVAL (ppm)	FREQUENCY	% FREQUENCY	% CUMULATIVE FREQUENCY
<0.5	35	13.8	13.8
0.5 - 0.9	57	22.4	36.2
1.0 - 1.4	45	17.7	53.9
1.5 - 1.9	52	20.5	74.4
2.0 - 2.4	34	13.4	87.8
2.5 - 2.9	14	5.5	93.3
3.0 - 3.4	4	1.6	94.9
≥3.5	13	5.1	100

RANGE = <0.5 - 26 ppm U

MEAN = 1.0 ppm U

ANOMALOUS = ≥2.5 ppm U

TABLE 3: Frequency Distribution of FOX Scintillometer Results

INTERVAL (c.p.s.)	FREQUENCY	% FREQUENCY	% CUMULATIVE FREQUENCY
6, 7	6	1.2	1.2
8, 9	4	0.8	2.0
10, 11	4	0.8	2.8
12, 13	85	16.9	19.7
14, 15	182	36.2	55.9
16, 17	156	31.0	86.9
18, 19	53	10.5	97.4
⩾20	13	2.6	100

RANGE = 7 - 25 c.p.s.

MEAN = 15 c.p.s.

ANOMALOUS = ⩾19 c.p.s.

APPENDIX III

LABORATORY GEOCHEMICAL RESULTS

SOILS

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont.

ATTN: PRINIC-FOX CLAIMS CC. J. hill

CERTIFICATE NO. 49517
INVOICE NO. 32099
RECEIVED Aug. 12/79
ANALYSED Aug. 22/79

SAMPLE NO. :	PPM U
79 PR 9001	1.0
9002	1.5
9003	1.5
9004	1.5
9005	1.5
9006	1.5
9007	2.0
9008	2.5
9009	1.5
9010	1.5
9011	6.0
9012	2.0
9013	2.5
9014	1.5
9015	1.5
9016	2.0
9017	1.5
9018	1.5
9019	2.0
9020	2.5
9021	1.5
9022	2.0
9023	2.5
9024	1.5
9025	2.0
9026	1.5
9027	2.0
9028	3.0
9029	1.5
9030	1.5
9031	2.5
9032	2.5
9033	6.0
9034	1.5
9035	2.0
9036	2.0
9037	1.0
9038	1.5
9039	1.0
79 PR9040	1.5

CERTIFIED BY: [illegible signature]

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49518

INVOICE NO. 32099

RECEIVED Aug. 12/79

ANALYSED Aug. 22/79

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont.

ATTN: PRINIC-FOX CLAIMS CC. J. Hill

SAMPLE NO. :	PPM U
79 PR 9041	1.5
9042	1.0
9043	7.5
9044	8.0
9045	1.5
9046	3.0
9047	1.5
9048	1.5
9049	1.5
9050	1.5
9051	1.0
9052	1.5
9053	2.0
9054	2.0
9055	2.0
9056	2.0
9057	1.5
9058	2.5
9059	Not sufficient sample
9060	1.5
9061	4.5
9062	2.5
9063	2.5
9064	2.0
9065	1.5
9066	1.5
9067	3.0
9068	2.0
9069	2.0
9070	2.5
9071	2.0
9072	4.0
9073	2.0
9074	2.0
9075	2.0
9076	< 0.5
9077	0.5
9078	0.5
9079	1.5
79 PR 9080	< 0.5

CERTIFIED BY: J.T. [illegible]

CHEMEX LABS LTD.

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

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49519

INVOICE NO. 32099

RECEIVED Aug. 12/79

ANALYSED Aug. 22/79

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311- 215 Carlingview Dr.,
Rexdale, Ont.

ATTN: PRINIC-FOX CLAIMS CC. E. Sacks

SAMPLE NO. :	PPM U
79 PR 9081	0.5
9082	0.5
9083	1.5
9084	1.5
9085	0.5
9086	1.0
9087	2.0
9088	1.5
9089	1.0
9090	1.0
9091	1.0
9092	1.0
9093	1.0
9094	1.0
9095	1.0
9096	6.0
9097	1.5
9098	1.5
9099	2.0
9100	2.5
9101	1.5
9102	3.0
9103	2.0
9104	2.0
9105	2.5
9106	2.0
9107	1.5
9108	2.0
9109	2.0
9110	2.5
9111	2.5
9112	2.0
9113	1.5
9114	6.5
9115	< 0.5
9116	0.5
9117	0.5
9118	< 0.5
9119	< 0.5
79 PR 9120	1.0

MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: D. F. [illegible]

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49520
INVOICE NO. 32123
RECEIVED August 12, 1979
ANALYSED August 23, 1979

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division
311 - 215 Carlingview Dr.,
Rexdale, Ont.
ATTN: M9W 5X8

PRINIC-FOX CLAIMS
c.c. Kamloops

SAMPLE NO. :	PPM U
79 PR 9121	0.5
9122	0.5
9123	0.5
9124	0.5
9125	2.0
9126	0.5
9127	0.5
9128	0.5
9129	0.5
9130	0.5
9131	0.5
9132	4.5
9133	1.0
9134	<0.5
9135	1.0
9136	1.0
9137	0.5
9138	1.5
9139	1.0
9140	0.5
9141	1.0
9142	1.5
9143	1.5
9144	1.0
9145	1.5
9146	2.0
9147	5.0
9148	1.5
9149	1.0
9150	3.5
9151	2.0
9152	0.5
9153	1.5
9154	0.5
9155	<0.5
9156	0.5
9157	0.5
9158	0.5
9159	<0.5
79 PR 9160	<0.5

CERTIFIED BY: Hart Bichler

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49521
INVOICE NO. 32123
RECEIVED August 12, 1979
ANALYSED August 23, 1979

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division
311 - 215 Carlingview Dr.,
Rexdale, Ont.
M9W 5X8

ATTN:

PRINIC-FOX CLAIMS
c.c. Kamloops

SAMPLE NO. :	PPM U
79 PR 9161	7.5
9162	1.5
9163	0.5
9164	0.5
9165	<0.5
9166	1.0
9167	<0.5
9168	0.5
9169	1.0
9170	6.0
9170	5.0
9171	<0.5
9172	<0.5
9173	<0.5
9174	<0.5
9175	<0.5
9176	0.5
9177	0.5
9178	<0.5
9179	1.0
9180	<0.5
9181	0.5
9182	1.0
9183	0.5
9184	1.0
9185	1.0
9186	0.5
9187	0.5
9189	0.5
9190	0.5
9191	<0.5
9192	0.5
9193	<0.5
9201	2.0
9202	1.0
9203	1.0
9204	<0.5
9205	1.0
9206	<0.5
79 PR 9207	1.0

CERTIFIED BY: Hart Bichler

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division
311 - 215 Carlingview Dr.,
Rexdale, Ont.
M9W 5X8

ATTN:

PRINIC-FOX CLAIMS
c.c. Kamloops

CERTIFICATE NO. 49522
INVOICE NO. 32123
RECEIVED August 12, 1979
ANALYSED August 23, 1979

SAMPLE NO. :	PPM U
79 PR 9208	0.5
9209	4.0
9210	1.5
9211	1.5
9212	1.0
9213	0.5
9214	<0.5
9215	<0.5
9216	<0.5
9217	0.5
9218	0.5
9219	<0.5
9220	<0.5
9221	0.5
9222	0.5
9223	<0.5
9224	0.5
9225	<0.5
9226	0.5
9227	<0.5
9228	5.0
9229	0.5
9230	<0.5
9231	0.5
9232	0.5
9233	8.5
9234	<0.5
9235	<0.5
9236	8.5
9237	1.0
9238	0.5
9239	1.0
9240	0.5
9241	0.5
9242	<0.5
9243	<0.5
9244	0.5
9245	5.0
9246	1.5
79 PR 9247	0.5

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Bichler

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division
311 - 215 Carlingview Dr.,
Rexdale, Ont.
ATTN: M9W 5X8

PRINIC-FOX CLAIMS
c.c. Kamloops

CERTIFICATE NO. 49523
INVOICE NO. 32123
RECEIVED August 12, 1979
ANALYSED August 23, 1979

SAMPLE NO. :	PPM U
79 PR 9248	1.0
9249	1.0
9250	0.5
9251	1.5
9252	1.0
9253	0.5
9254	1.0
9255	1.5
9256	1.0
9257	2.0
9258	4.0
9301	1.0
9302	1.0
9303	0.5
9304	5.0
9305	1.0
9306	4.0
9307	26
9308	2.0
9309	4.5
9310	0.5
9311	0.5
9312	1.5
9313	1.0
9314	24.0
9315	1.5
9316	1.0
9317	1.0
9801	2.0
9802	1.0
9803	1.0
9804	1.0
9805	2.0
9806	1.0
9807	1.5
9808	1.0
9809	1.0
9810	1.0
79 PR 9811	1.5

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Bichler

APPENDIX IV

LABORATORY GEOCHEMICAL RESULTS

ROCKS

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont.

ATTN: PRINIC-FOX-Claims CC. J. Hill (ROCKS)

CERTIFICATE NO. 49511
INVOICE NO. 32137
34009 - Th only
RECEIVED Aug. 12/79
ANALYSED Aug. 24/79

SAMPLE NO. :	PPM U	PPM Th	U/Th Ratio
79 PR 8901	1.5	9	.17
9901	2.0	5	.40
9902	2.0	6	.33
9903	0.5	5	.10
9904	1.0	6	.17
9905	< 0.5	8	.03
9906	1.0	7	.14
9907	1.0	8	.12
9908	0.5	5	.10
9909	< 0.5	5	.05
9910	0.5	8	.06
9951	0.5	6	.08
9952	0.5	10	.05
9953	0.5	7	.07
9954	0.5	10	.05
9955	0.5	6	.08
9956	< 0.5	6	.04
9957	< 0.5	3	.08
9958	< 0.5	7	.03
9959	0.5	8	.06
9960	0.5	6	.08
9961	1.0	8	.12
79 PR 9962	0.5	6	.08

CTA MEMBER

CERTIFIED BY: [signature]

APPENDIX V

Report by C.F. Gleeson, PhD., P. Eng.

Geochemical Consultant

October 19, 1979

FOX

Geology: The property is underlain by biotite granodiorite. R.H.W. (memo Sept. 13) mentions flat lying vein system made up of carb-qtz-musc. These are not shown on the geology map.

All rocks collected contain 2 ppm U or less.

Geochemistry: There are several weak (3 - 26 ppm U) soil anomalies, 3 of these are present in the south part of the property and they appear to be closely associated with the drainage system. There are no significant radiometric anomalies associated with the soil anomalies.

Conclusion: No further work is warranted.

STATEMENT OF EXPENDITURES

CLAIMS FOX 1 (12 Units)

RECORD NUMBERS 478

	Pro-rated Costs
Salaries and Benefits	$1,556.91
Travel and Accommodation	219.41
Drafting and reproduction	118.12
Consultant	56.80
Camp costs and supplies	471.50
Rental of equipment	531.78
Administration @ 10%	295.48
SUB TOTAL	3,250.00

Linecutting 6.8 km @ $218	$ 1,470.00[2]		
Geochemical analyses	304.64[3]		
PAC	-		$1,774.64
TOTAL		$	5,024.64

Notes

1) Pro-rated on basis of 10 man-days worked on claims conducting geological/geochemical/geophysical surveys out of a total of 798 man-days spent on these surveys during Project Prinic (see attached breakdown on following sheet)

2) Linecutting completed by Futura DevelopmentsReg'd.,Penticton, B.C.

3) Geochemical analyses completed by Chemex Labs, Vancouver, B.C.

PROJECT PRINIC EXPENDITURES- 1979

Geological,Geochemical/Geophysical Surveys
Excl.linecutting, drilling,staking and geochemical analyses

Salaries and Benefits	$ 124,242
Travel and Accommodation	17,509
Drafting and Reproduction	9,426
Consultant	4,533
Camp Costs and Supplies	37,626
Rental of Equipment	42,436
Administration @ 10%	23,578
TOTAL	$ 259,350[1]

Note:

[1] A total of 798 man-days was spent carrying out geological/geochemical/ geophysical surveys during summer 1979 on Project Prinic (refer attached man-day breakdown)

PROJECT PRINIC EXPENDITURES

1979 FIELD WORK (excluding drilling, geochem analyses staking)

	Claim	No. of Man-Days Work	Pro-rated Survey[1] cost @$325/man-day	No. of miles(km) of linecutting	Linecutting Cost @$350/l.m.(or $218/km)
1)	MAR 1-2	35	$ 11,375	5.5(8.9)	$ 1,925
2)	WAS 1-2	15	4,875	9.1(14.6)	3,185
3)	GLAD 1-4) 5-10)	11	3,575	—	—
4)	SEC 1	20	6,500	8.5(13.7)	2,975
5)	FIN 1-2	10	3,250	-	-
6)	NIC	50	16,250)		
		45	14,625)	28.2(45.4)	9,870
		40	13,000)		
7)	FRED 1-2) 3-5)	20	6,500	14.8(23.8)	5,180
8)	LINK 1-3	144	46,800	33.5(53.9)	11,725
9)	BALD 1-4	55	17,875	36.6(58.9)	12,810
10)	ENEAS 1-5	44	14,300	11.1(17.9)	3,885
11)	TOK 1-4	70	22,750	41.8(67.3)	14,630
12)	DEMUTH 1	10	3,250	5.4(8.7)	1,890
13)	DARK 1-5	32	10,400	32.4(52.1)	16,524
14)	COMA 1-3	2	650	-	-
15)	FOX 1	10	3,250	4.2(6.8)	1,470
16)	MEL 1-2	20	6,500	6.4(10.3)	2,240
17)	SHORT 1	-	-	-	-
18)	SHIN 1-2	-	-	-	-
19)	CLARK 1-6	125	40,625	19.4(31.2)	6,790
20)	DROP 1	15	4,875	3.4(5.5)	1,190
21)	STAKE 1-2	25	8,125	5.4(8.7)	1,890
	TOTAL	798	$259,350	233.3(375.4)	$98,179

Author's Qualifications

Johannes R. Hill

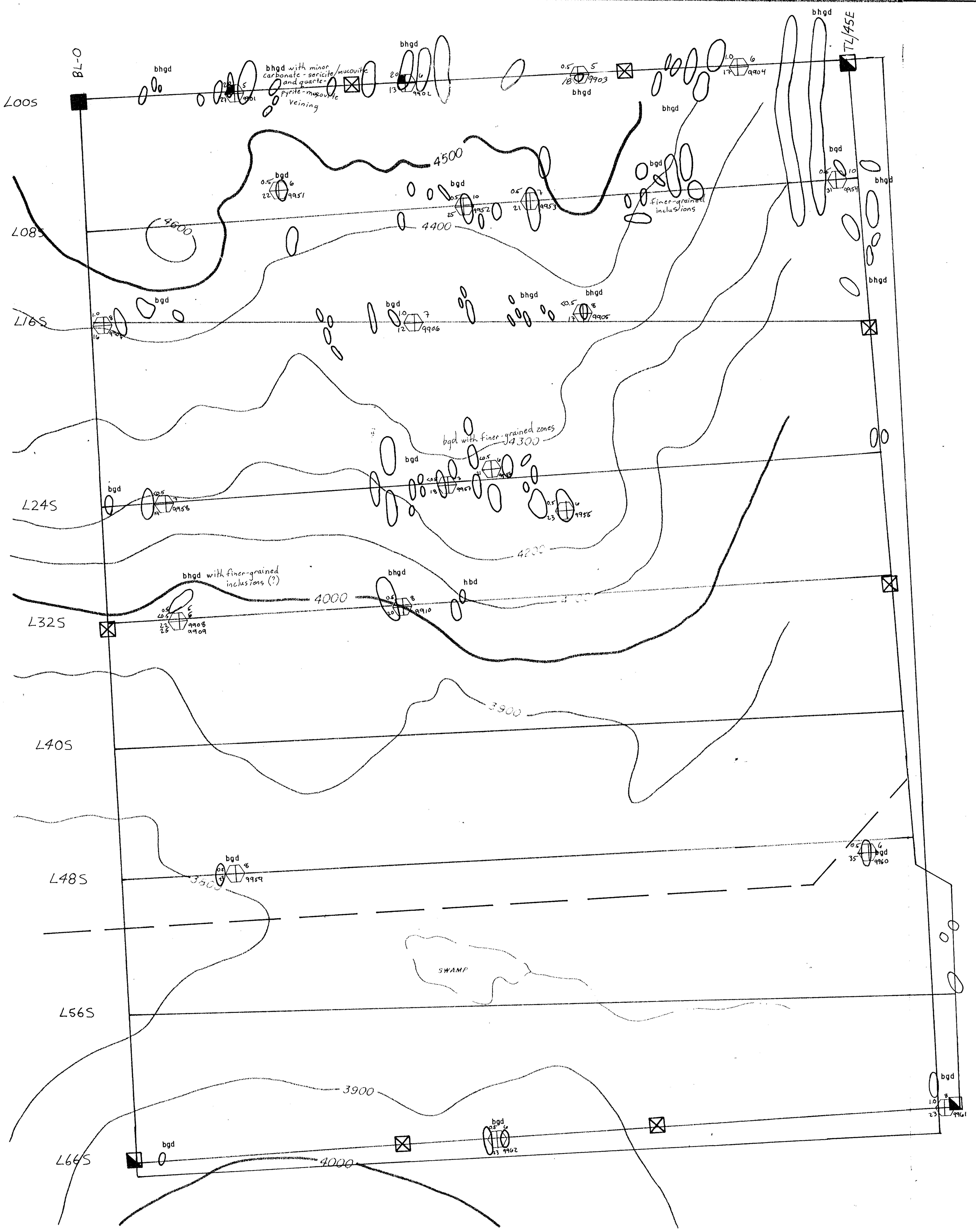
Education - Graduated Queen's University,
Kingston, Ontario
B.Sc. Honours in Geology, 1975

Work Experience - Employed as Canadian Occidental Petroleum Ltd. field exploration geologist since 1975. Carried out and supervised geological programs across Canada based out of Minerals Division office, Toronto, Ontario.

Respectfully submitted,

Johannes R. Hill

Johannes R. Hill

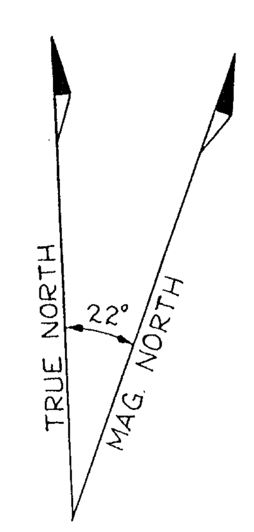


LEGEND

ROCK GEOCHEMISTRY
Sample Site
ppm U / ppm Th
Scintillometer Reponse (c.p.s.) / 79PR Sample Number

ANOMALOUS

≥2.0 ppm U
79PR Sample Number
bgd Biotite granodiorite
bhgd Biotite-hornblende granodiorite
Outcrop
Legal Corner Post
Corner post
Intermediate post
claim boundary
pipeline



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION
PROJECT PRINIC

FOX 1 CLAIM

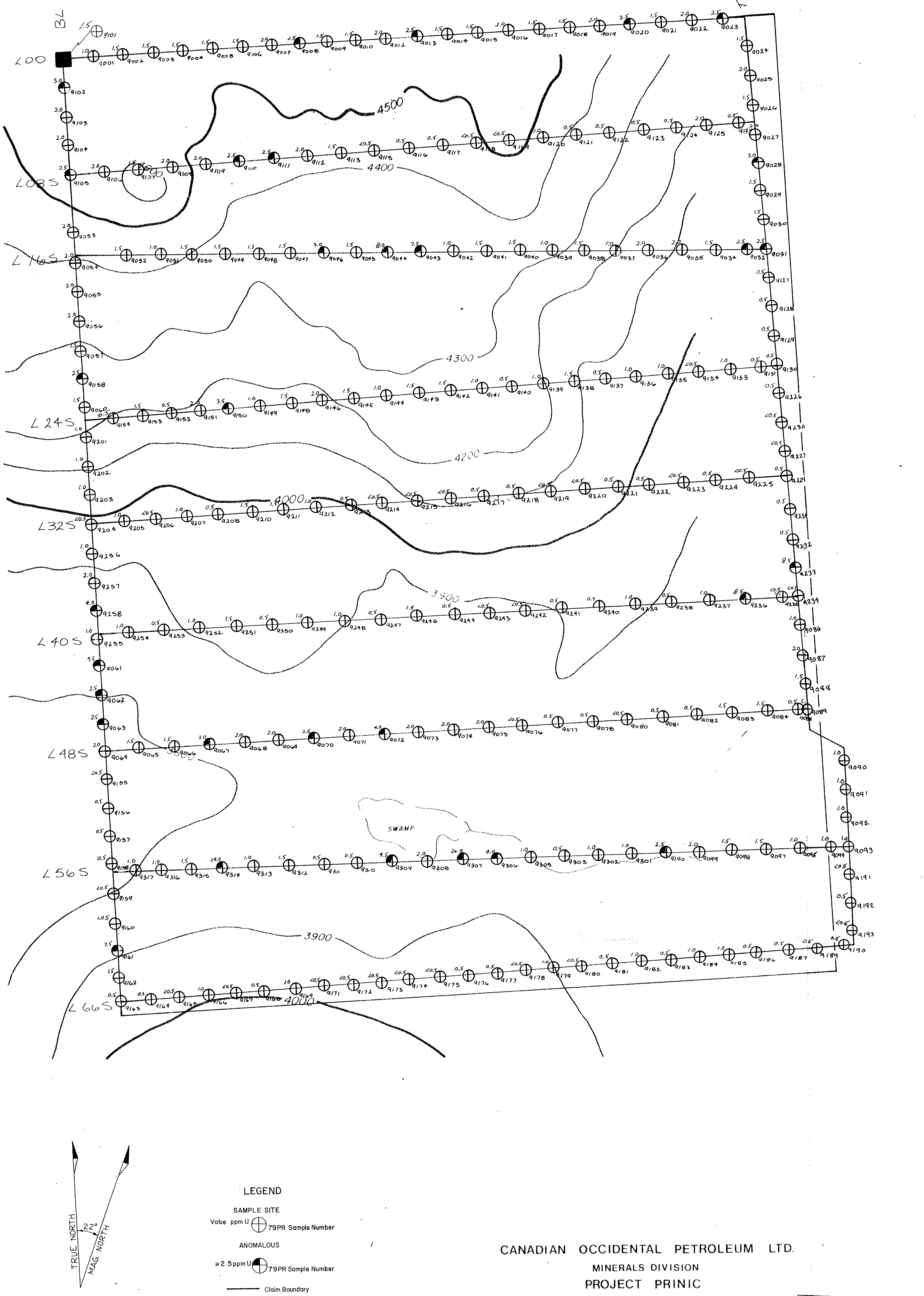
NICOLA MINING DIVISION, BRITISH COLUMBIA
N.T.S. 92 I 2E

GEOLOGY & ROCK GEOCHEMISTRY

SCALE IN FEET
400 0 400 800 1200

AUGUST 1979

PLAN 1



LEGEND

SAMPLE SITE

Value ppm U — 79PR Sample Number

ANOMALOUS

≥2.5 ppm U — 79PR Sample Number

Claim Boundary

Legal Corner Post

CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

PROJECT PRINIC

FOX 1 CLAIM

NICOLA MINING DIVISION, BRITISH COLUMBIA

N.T.S. 92 I 2E

SOIL GEOCHEMISTRY URANIUM

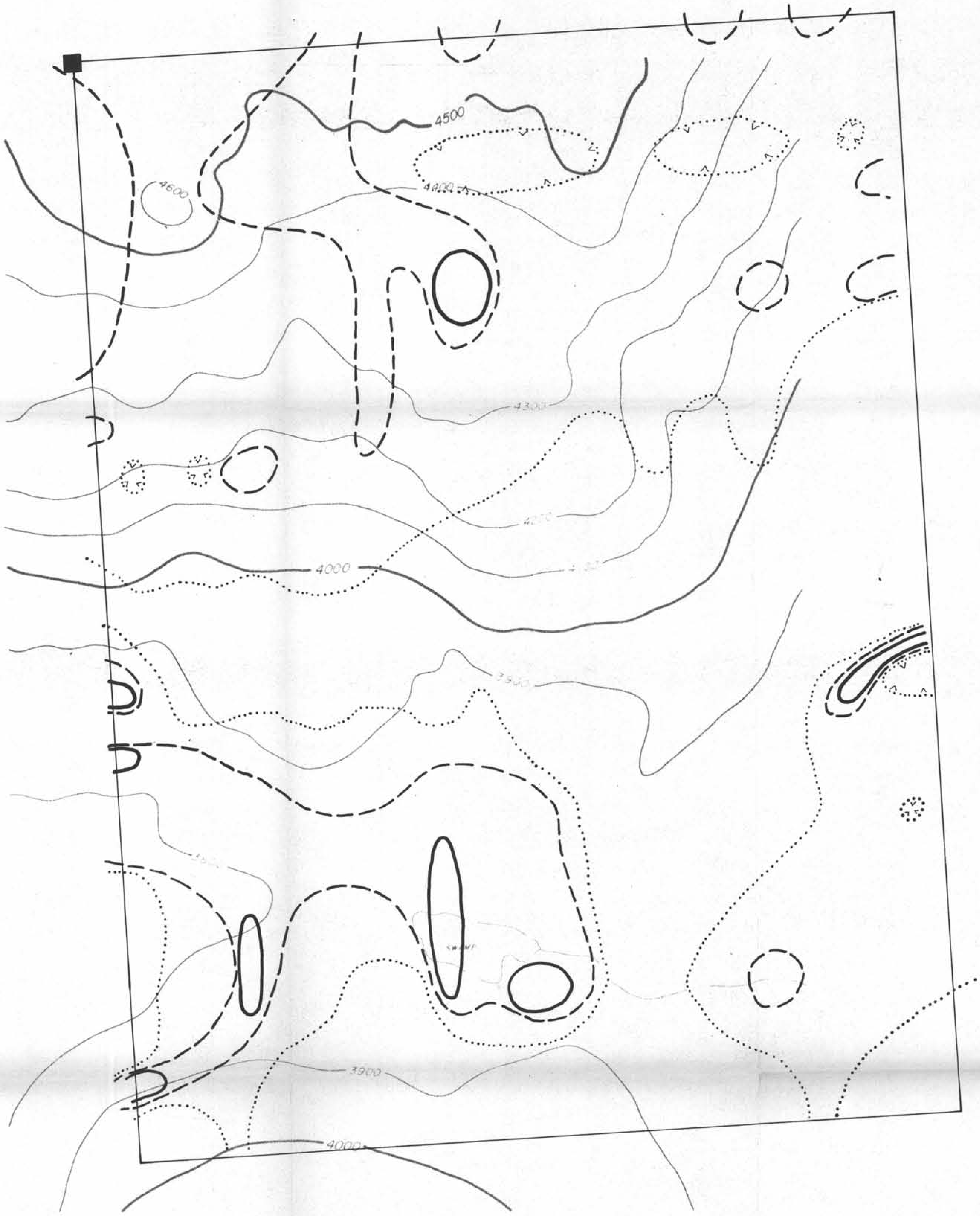
SAMPLE LOCATION AND VALUE

SCALE IN FEET

400 0 400 800 1200

AUGUST 1979

PLAN 2



LEGEND

U contours in ppm

- 1.0
- 2.0
- 4.0
- Claim boundary
- Legal Corner Post

CANADIAN OCCIDENTAL PETROLEUM LTD

MINERALS DIVISION

PROJECT PRINIC

FOX 1 CLAIM

NICOLA MINING DIVISION, BRITISH COLUMBIA

N.T.S. 92 I 2E

SOIL GEOCHEMISTRY URANIUM

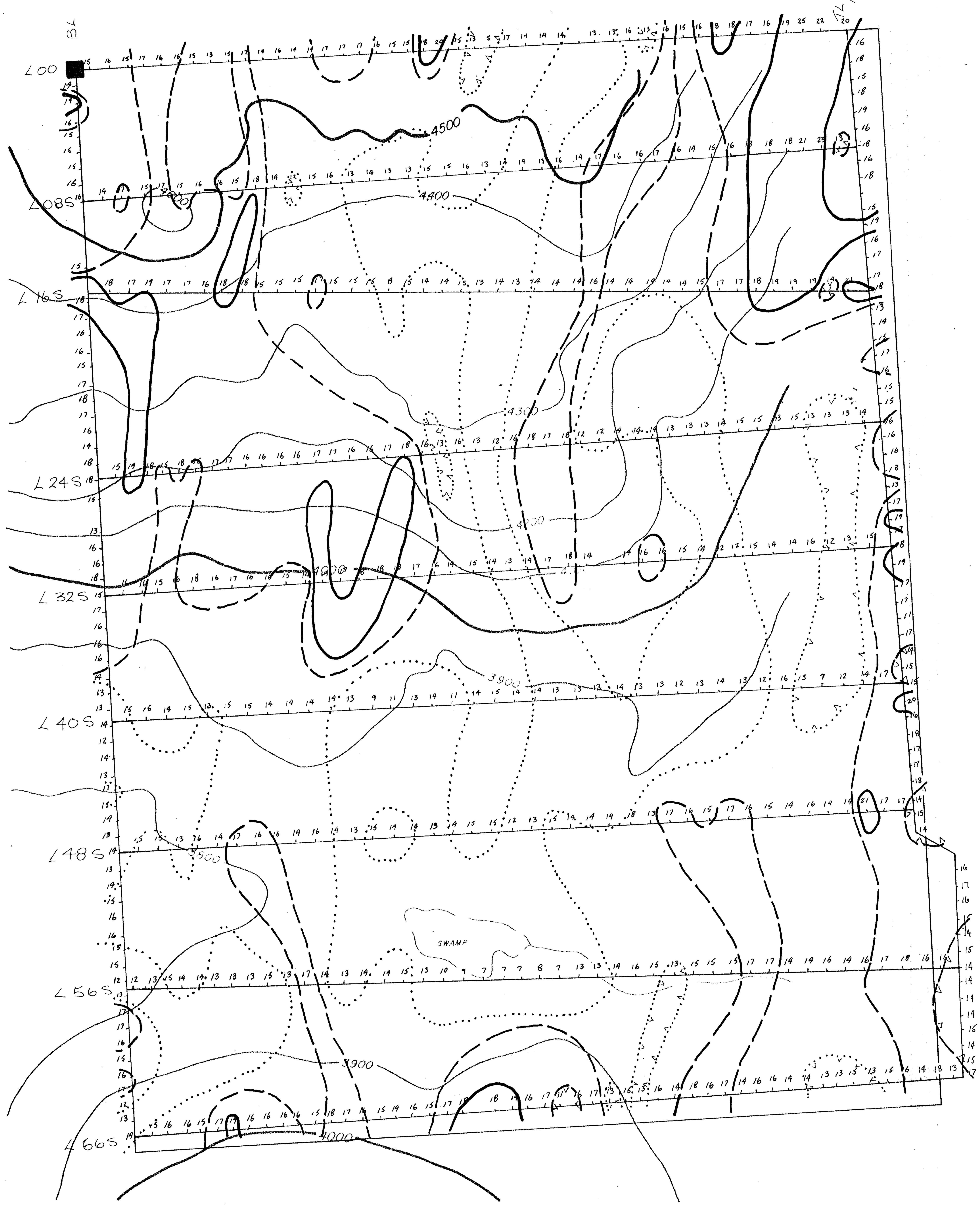
CONTOURED VALUES

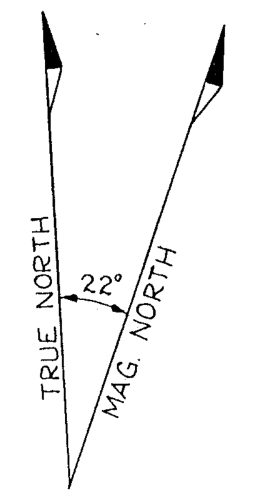
SCALE IN FEET

400 0 400 800 1200

AUGUST 1979

PLAN 3





LEGEND

Readings in c.p.s.
Urtec Model UG 130 TC 2 at 10 secs.

18 c.p.s.

16 c.p.s.

14 c.p.s.

Claim Boundary

Legal Corner Post

CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

PROJECT PRINIC

FOX 1 CLAIM

NICOLA MINING DIVISION, BRITISH COLUMBIA
N.T.S. 92 I 2E

SCINTILLOMETER SURVEY

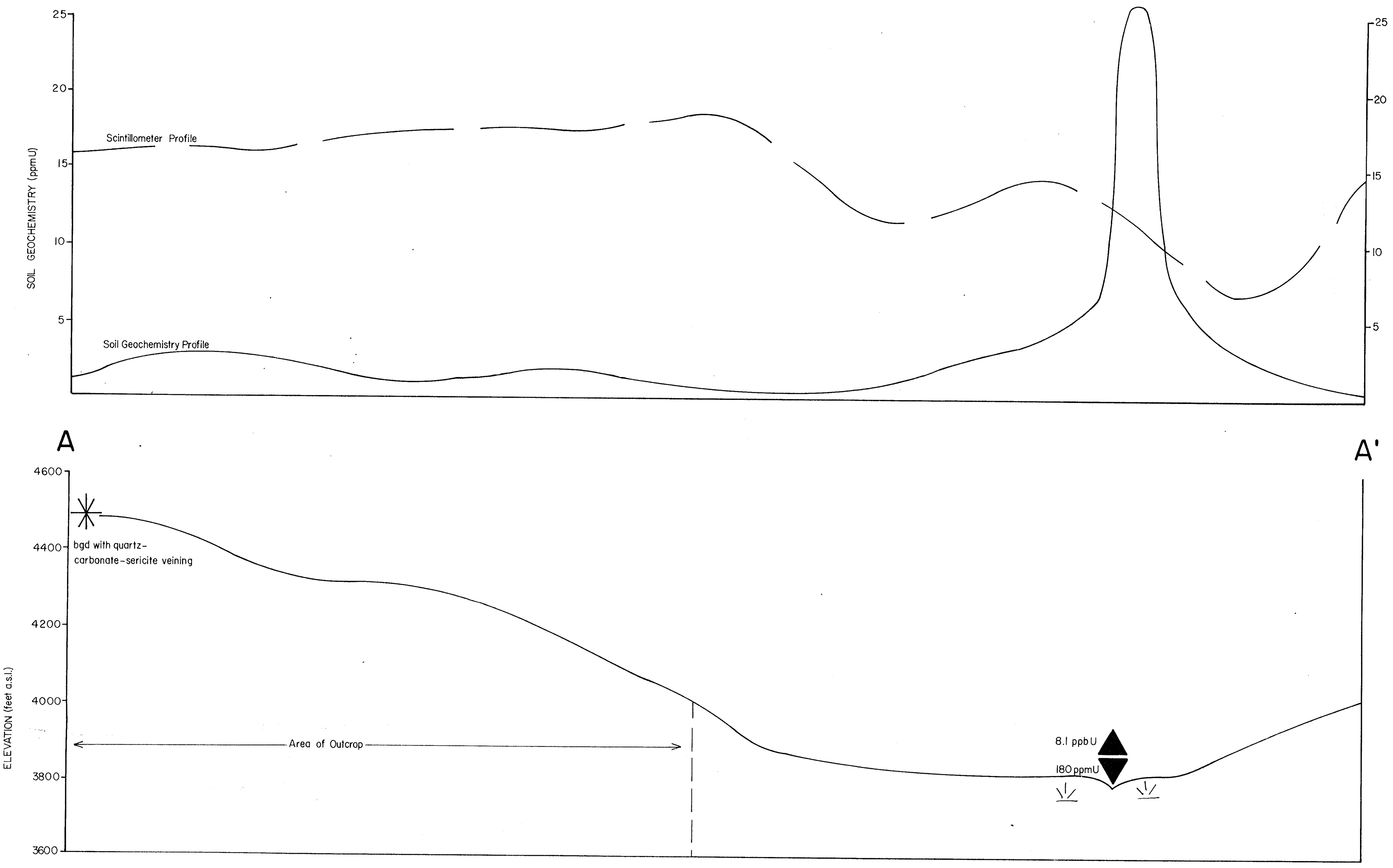
LOCATION, VALUE AND CONTOURED VALUES OF SCINTILLOMETER READINGS

SCALE IN FEET

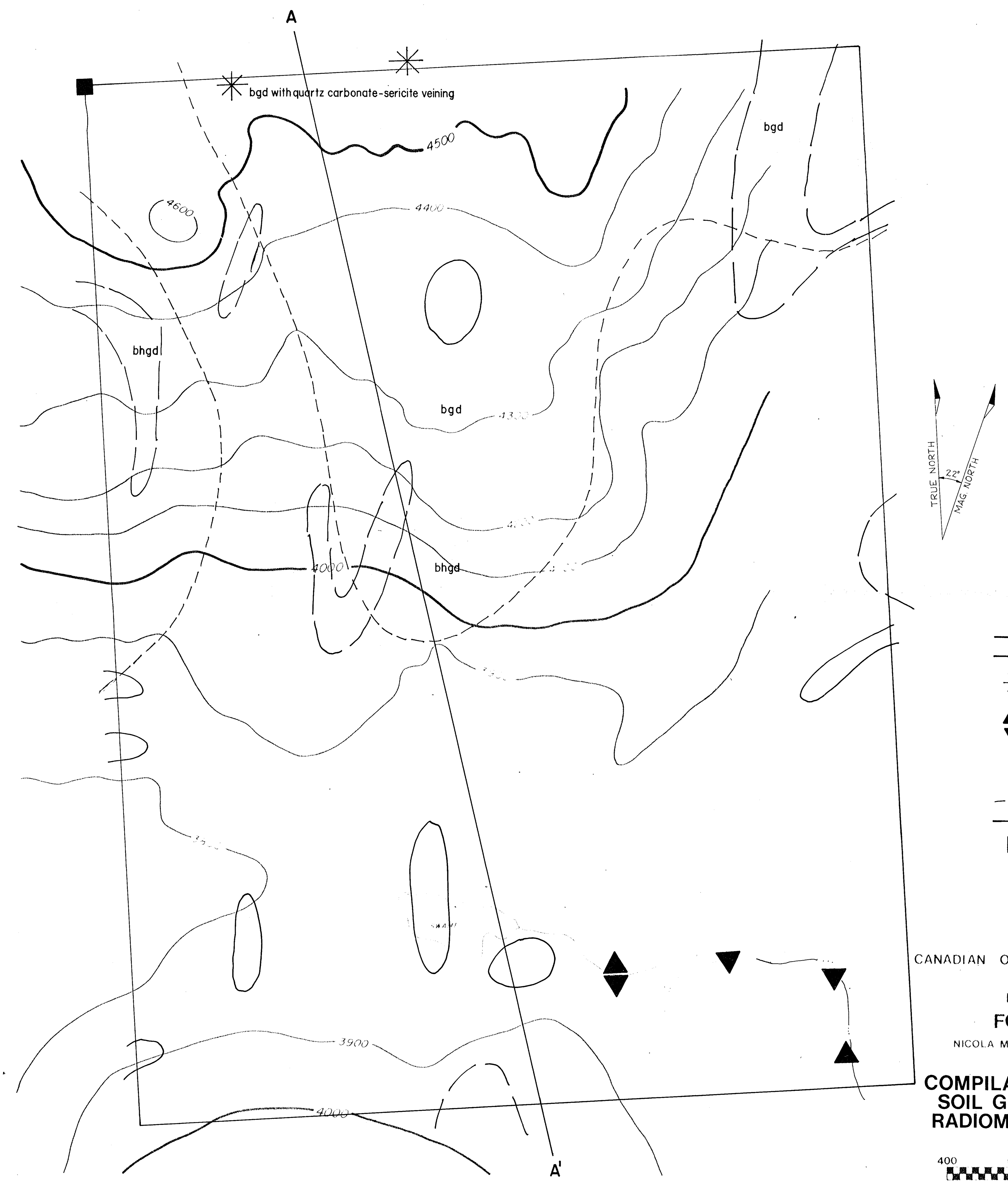
400 0 400 800 1200

AUGUST 1979

PLAN 4



SCHEMATIC CROSS-SECTION (A-A') - FOX CLAIMS



LEGEND

- Soil Geochemistry 4.0 ppm U contour
- Scintillometer 18 c.p.s. contour
- Rock Geochemistry 2.0 ppm U
- Water Geochemistry 1978 Survey >2.0 ppbU
- Sediment Geochemistry 1978 Survey >10.0 ppmU
- bgd Biotite granodiorite
- bhgd Biotite-hornblende granodiorite
- Encloses areas of outcrop
- Claim Boundary
- Legal Corner Post

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8276

CANADIAN OCCIDENTAL PETROLEUM LTD
MINERALS DIVISION
PROJECT PRINIC

FOX 1 CLAIM

NICOLA MINING DIVISION, BRITISH COLUMBIA
N.T.S. 92 I 2E

COMPILATION OF GEOLOGY, SOIL GEOCHEMICAL AND RADIOMETRIC ANOMALIES

SCALE IN FEET
400 0 400 800 1200

AUGUST 1979 PLAN 5