CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

GEOLOGY AND GEOCHEMISTRY OF THE OXY CLAIM GROUP

CLAIMS:

OXY: 1-48

Watson Lake Mining District
Yukon Territory

by:
Eric James Sacks, M.Sc.

090 627

Work Completed July 23 and 31, 1979

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representing ... the amount of $ 5,450

Geologist or
Resident Mining Engineer

Considered as representation work under Section 53 of the Yukon Quartz Mining Act.

Commissioner of Yukon Territory

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SUMMARY

The OXY Claim Group is located at 132° 50'W, 61° 16'N, and comprises 48 individual claims within the Watson Lake Mining District,Yukon Territory. The claims were staked on June 16, 1979 to cover the headwaters of a G.S.C. stream sediment U-Mo-W anomaly released in O.F.R. 564 on June 15, 1979, Canadian Oxy conducted follow-up geology, prospecting and geochemical surveys over the claims on July 23.

The OXY Claims are underlain by Upper Paleozoic quartzite which has been intruded by Cretaceous quartz-monzonite of the Nisutlin Batholith. A layered ultramafic mass of Carboniferous to Permian age has been thrust (intruded?) over this assemblage from the southwest.

Anomalous contents of uranium occur in quartzite and quartz-monzonite in the central portion of the claims. A broad U soil anomaly occurs downslope from this area. Intense soil and stream sediment Cu anomalies occur in the northwest corner of the claims and are derived from weathered ultramafic material.

Potential mineralization could include U within veins in leucocratic quartz-monzonite or associated with the quartzite - quartz-monzonite contact and/or Cu - asbestos mineralization within serpentinized ultramafic rocks.

I. - INTRODUCTION

The OXY Claim Group was staked on June 16, 1979, to cover the headwaters of a G.S.C. stream sediment U-Mo-W anomaly released as part of O.F.R. 564 on June 15, 1979. On July 23, 1979, Canadian Oxy conducted a reconnaissance geology and geochemistry survey over the OXY Claims. This report presents the results of that survey.

II. LOCATION AND ACCESS

The OXY Claim Group is located at 132° 50' W, 61° 16'N, within NTS map sheet 105F/7. The Claim Group comprises 48 individual claims covering 3.8 mi.^{2} (9.9km^2) within Watson Lake Mining District, Yukon Territory. (Figs. 1 & 2)

The OXY Claims are situated approximately 5 miles (8 km) due east of the Canol Road, south of Big Creek and approximately 20 miles (32 km) N.E. of Quiet Lake. The Canol Road is a narrow, summer only, graded, dirt road built during WWII to service the oil pipeline which was to carry oil south from Norman Wells. The pipeline was never completed and has since been taken up although its right-of-way is still visible. Access to the claims is via helicopter, approximately 15 minutes from Quiet Lake which offers the only site for easy camping in the area.

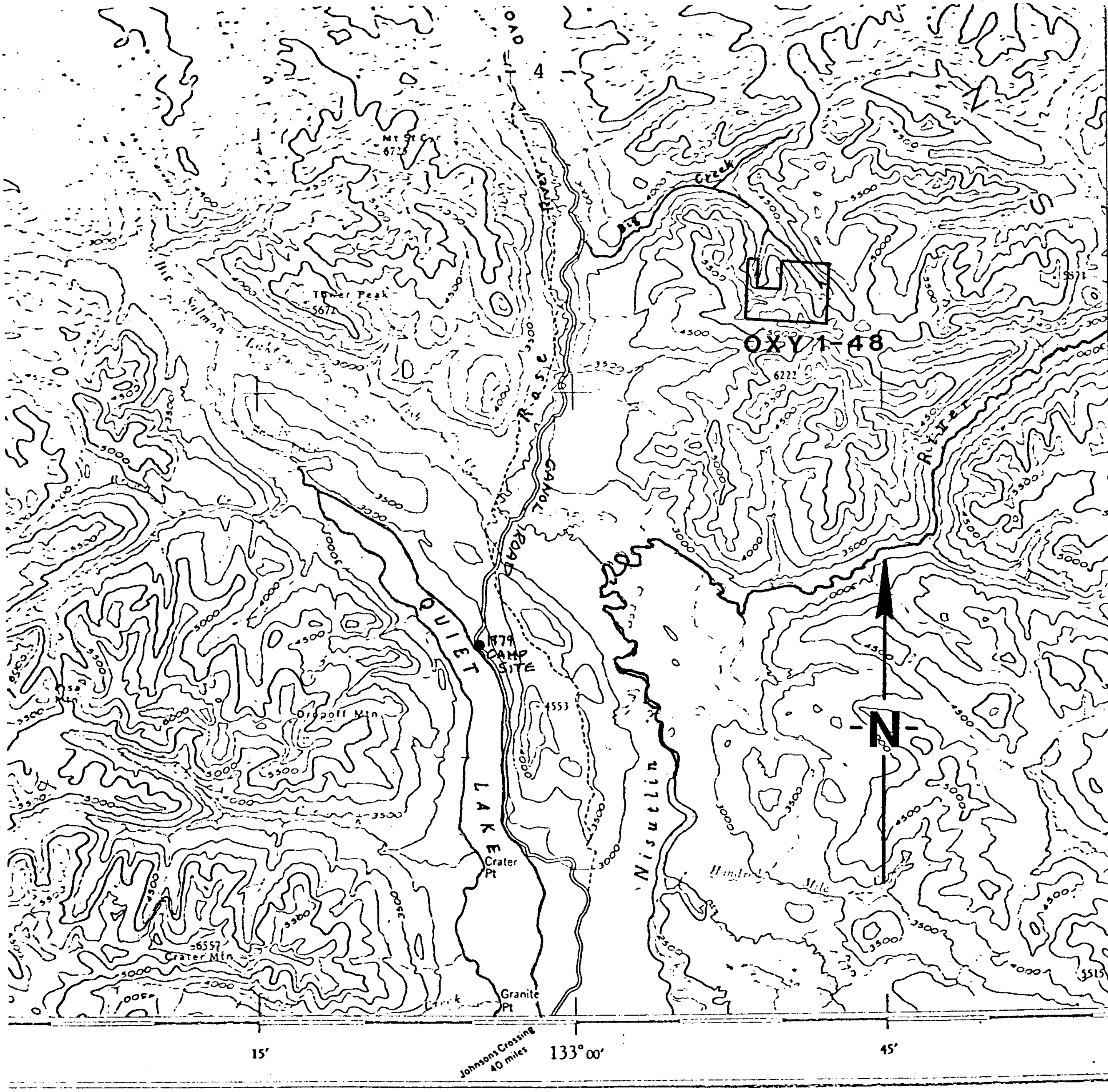

FIGURE I

LOCATION AND ACCESS OF OXY CLAIMS

Scale: 1:250,000

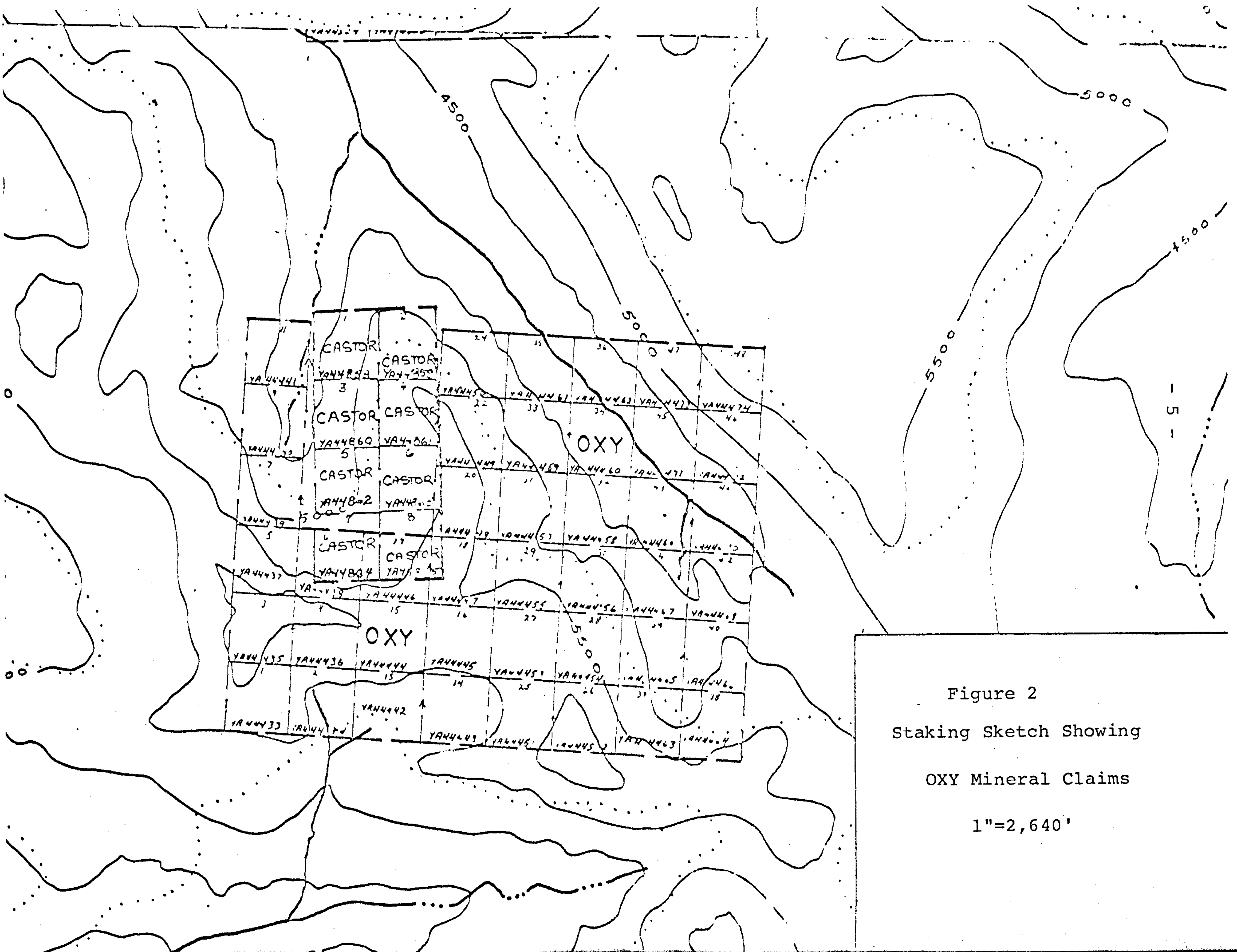

Figure 2

Staking Sketch Showing

OXY Mineral Claims

1"=2,640'

III. - PHYSIOGRAPHY AND VEGETATION

Relief over the OXY Claims is approximately 1,500 ft. (460m) between elevations of 6,000 ft. and 4,500 ft. (1830m and 1370m) above sea level. Topography is rugged consisting of steep valleys with extensive talus slopes, rocky bluffs and cliffs. Systematic grid work would be difficult. Main valleys are filled with extensive glacial material and are sparsely wooded. Higher portions are either rocky and devoid of vegetation or are covered by tundra grass and sparse bushes.

IV. - PREVIOUS WORK

No evidence of previous work was noted. An asbestos occurrence (JUDY Claims) is located approximately 3 miles (4.8km) to the northwest within an ultramafic body. It is unknown whether the OXY Claims were similarly explored.

The Quiet Lake map sheet (NTS 105F) has been geologically mapped by numerous G.S.C. geologists over the period 1956 to 1977. In the summer of 1978 the G.S.C. conducted reconnaissance stream sediment and water sampling over the entire Quiet Lake sheet. Data was released on June 15, 1979, as O.F.R. 564 and the OXY Claims staked the next day to cover the headwaters of a U-Mo-W anomaly (114 ppmU, 16 ppmMo, 26 ppmW). Sometime late on June 15, 1979, Eldorador Nuclear Limited, staked the CASTOR Claims which indent into the northwest corner of the OXY Claims and cover an apparent gossan in a stream valley which has proven to be red weathering, ultramafic, talus material. The OXY claims were subsequently staked around the CASTOR Claims to cover the ridge crest. There appear to be no conflicts between the two claim group boundaries.

V. - WORK COMPLETED - 1979

5.1 - Staking

The OXY Claim Group, which consists of 48 individual claims, was staked on June 16, 1979 by MBW Surveys of Whitehorse, Yukon Territory for Canadian Oxy.

5.2. - Geological Mapping

Hooper conducted geological mapping and prospecting over the OXY Claims on July 23, 1979. On July 31, 1971, Wallis, Sacks and Hooper visited the OXY Claims. A total of 1.6 man-days of work were performed.

5.3 - Geochemistry

Pelletier, Jermackowicz, and Zayachivsky, all of Canadian Oxy collected a total of 2 heavy mineral, 19 stream sediment, 18 stream water and 21 soil samples over the OXY Claims on July 23, 1979. As well, 11 rock samples were collected during the mapping survey. All samples were sent to

Chemex Labs Ltd., Vancouver, B.C. for geochemical analysis. Results are listed in Appendix I. A total of 3 man-days of work were performed.

5.4 Summary of Work Completed

Type of Work	Man Days	No. Samples	No. Analyses											
			Cu	Mo	Pb	Zn	Ag	U	Th	Sn	W	F	As	Total
Geological Mapping	1.6													
Geochemistry	3													
(i) Rock		11	11	11	11	11	11	11	11	11	11	-	-	99
(ii) Heavy Min.		2	2	2	2	2	2	2	2	2	2	-	-	16
(iii) Sediment		19	19	19	19	19	19	19	-	-	-	-	-	133
(iv) Water		18	-	-	-	-	18	-	-	-	-	18	18	54
(v) Soil		21	21	21	21	21	21	21	-	-	-	-	-	147
Helicopter	2.6 hrs.													
TOTAL	4.6	71												449

5.5 - Names and Addresses of Personnel

Dr. R.H. Wallis — Chief Geologist
Canadian Occidental Petroleum Ltd.
Minerals Division
311-215 Carlingview Drive
Rexdale, Ontario
M9W 5X8

E.J. Sacks, M.Sc. — Project Geologist
(Same address as above)

J. Hooper — Senior Assistant
(Same address as above)

E. Jermakowicz — Junior Assistant
(Same address as above)

C. Pelletier — Junior Assistant
(Same address as above)

B. Zayachivsky — Junior Assistant
(Same address as above)

Dr. C. F. Gleeson — Consulting Geochemist
C.F. Gleeson and Associates
Ottawa, Ontario

VI. - GEOLOGY

6.1 - General Geology

Compilation and mapping by Tempelman-Kluit (1977) shows the OXY Claims to be underlain by Carboniferous to Permian amphibolite and greenstone (Unit CPav) which has been intruded by Cretaceous biotite quartz-monzonite of the Nisutlin Batholith (Unit Kpqm). Thrust (?) onto this assemblage is a "piece" of serpentinized ultramafic rock of widely variable rock-types (Unit CPaub).

Mapping by Canadian Oxy geologists confirms Tempelman Kluit's general interpretation, but at this time we are no more certain of the thrust relationship between the ultramafics and quartz-monzonite than before. Traversing has, however, identified an area of quartzite and siltstone which is probably part of the Mesozoic greenstone assemblage.

6.2 - Table of Formations (PLAN I)

Unit	Description
QM	Biotite quartz-monzonite
Ub	Ultramafics; peridotite, diorite, sepentinite
Qtz	Quartzite, meta-siltstone

6.3 - Description of Rock Units

Descriptions of individual samples along with their trace element contents are listed in Appendix II. All granitic rocks were stained with Sodium Cobaltinitrate after being immersed in HF in order to distinquish K-feldspar from plagioclase. The Colorado School of Mines, classification of Igneous rocks was used to name rock samples. (Travis, 1955)

Unit - Qtz - Quartzite, meta-siltstone

This unit underlies the south central portion of the OXY Claims and comprises very, fine-grained, massive, thickly bedded, faintly banded, quartz arenite. Colours range from golden brown to black depending upon the degree on impurity. In one case (JH-OXY-9A) the rock appears to have been brecciated.

Unit - Ub - Ultramafic

This unit comprises extremely variable rock-types including dunite and peridotite plus their equivalents in various degrees of serpentinization from massive peridotite with serpentine slickensides on facture planes (JH-OXY-2,3) to almost completely altered material (JH-OXY-4). The unit is dun, to orange, to red weathering and contains numerous ultramafic textures including blocky fracturing and podiform features. The red weathering product at first glance re-sembles gossan as in the abundant talus material covering the floor of the steam valley now occupied by the CASTOR Claims. Subtle variation in rock types over very small distances are common and their interrelationships highly complex.

Unit - QM - Biotite quartz-monzonite

This unit comprises medium to coarse-grained, occasionally K-feldspar megacrystic rock containing plagioclase (30-35%), K-feldspar (35-60%), quartz (10-35%) and biotite (5-10%). In places (eg. JH-OXY-8) composition approaches granite and the rock is leucocratic.

6.4 - Structure

Fracturing resolves into sets at 00T/70^{o}W to 90^{o} and 040T to 060T/45^{o}S.E. to 90^{o}.

Tempelman-Kluit (1977) suggest that the ultramafic body is thrust over the yonger rocks of the Nisutlin Batholith. If so this would involve a NW trending and SW dipping thrust plane which is compatible with the situation elsewhere in the Cordillera and the distribution of rock units noted during the Canadian Oxy survey of the OXY Claims.

When viewed from the north the ultramafic mass appears to be layered; layering dips steeply westward. Talus is abundant and obscures the contact with adjoining meta-sediments.

6.5 - Metamorphism

The only effect of note appears to be recrystallization of the quartzite and its occasional brecciation. (JH-OXY-9A). Slickensides have developed on joint surfaces within the ultramafic mass.

6.6 - Alteration

Alteration is extensive within the ultramafic mass. Serpentinization of dunite and peridotite occurs as slickensides developed on joint surfaces, as pods and masses within the rock and as veins probably developed by passage of solutions along joint surfaces. The ultramafics weather to a red to a dun coloured product which can be mistaken for more conventional gossan. The quartzite and quartz monzonite are only slightly limonitized along joint planes.

6.7 - Economic Geology

Potential mineralization is not obvious. Uranium mineralization could occur as veins within the quartz-monzonite, although it is a one-mica granite, or related to the quartzite-quartz monzonite contact. Sulphide mineralization may occur within the ultramafic mass as well as asbestos (note serpentine alteration occasionally fibrous - eg. JH-OXY-3).

VII. - GEOCHEMISTRY

Mean, possibly anomalous and probably anomalous levels for each element in stream sediments, waters and heavy minerals were determined at the 50th, 84th and 97th percentiles of cumulative frequency distributions constructed from the Project WATSU regional follow-up survey data. In the case of soil samples the combined data from all claim groups examined during Project WATSU were used. In the case of rock samples data published in Levinson (1974) (Table 2-1) were used. These levels are listed in Table I and analytical data are listed in Appendix I. Sampling and laboratory procedures are listed in Appendix III.

7.1 - Rock Geochemistry (PLAN 2,3)

A total of 11 rock samples were collected and analysed for Cu, Mo, Pb, Zn, Ag, U, Th, Sn and W. Trace element contents are listed in Appendix II along with rock descriptions.

(1) 4.5 to 23 ppm U occur in 4 samples over a length of 1200 ft. straddling the quartzite-quartz monzonite contact in the central portion of the claims. Within the quartz-monzonite samples U/Th ratios are much less than unity, however, ratios within the quartzite samples are greater than unity (3.8 in JH-OXY-5 and 1.1 in JH-OXY-7). Experience has shown these recoverable uranium contents to be anomalously high.

TABLE 1

Mean, Possibly Anomalous and Probably Anomalous Levels - Soils, Sediments, Waters, Heavies.

Note: levels chosen from cumulative frequency curves at 50th, 84th and 97th percentiles, respectively.

A. Heavy Minerals

	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Mo	ppb Au	ppm Sn	ppm W	ppm U	ppm Th
Mean	24	17	75	.05	1.5	<10	2.3	15	3.8	44
Poss. Anom.	63	89	200	.38	3.5	19	38	60	26	330
Prob. Anom.	165	280	440	.95	8.5	3150	300	160	120	1200

B. Stream Sediments

	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Mo	ppm Sn	ppm W	ppm U	ppm Th
Mean	11	5	58	<.1	<1	<1	<1	2.5	13
Poss. Anom.	28	21	115	<.1	3	2	5	17	29
Prob. Anom.	54	59	320	1	11	5	16	38	50

C. Soils

	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Mo	ppm Sn	ppm W	ppm U	ppm Th
Mean	8	8	48	<.1	<1	<1	<1	2	14
Poss. Anom.	22	32	115	.1	2.5	1	7.5	7	36
Prob. Anom.	120	150	270	.8	5	2	40	30	75

D. Stream Waters

	ppb U	ppb F	m.mhos/cm S.C.
Mean	.25	19	18
Poss. Anom.	.85	100	46
Prob. Anom.	2.5	210	100

The relationship between the U/Th ratios of the two rock-types is unclear since the quartzite does not appear to be derived from the quartz-monzonite; it is postulated that the quartz-monzonite has intruded older quartzite. In any case, recoverable U contents over this area are anomalous.

(2) 9 ppm U and 40 ppm Th (U/Th=0.2) occur in a sample of leucocratic quartz-monzonite from the southeast corner of the Claim Group. (JH-OXY-10)

7.2 - <u>Heavy Mineral Geochemistry (PLAN 4,5,6)</u>

Two heavy mineral samples were collected from the eastern and southwest areas of the OXY Claims and analysed for Cu, Mo, Pb, Zn, Ag, U, Th, Sn and W.

(1) Sample No. 79-WT-1231 from the southwest corner of the claims contains 70 ppm Cu, 8 ppm Mo, 0.8 ppm Ag and 300 ppm W. Cu, Mo and Ag contents are possibly anomalous while the W content is highly anomalous. The stream apparently drains the ultramafic mass.

(2) 84 ppm Cu, 12 ppm Mo, 122 ppm Pb, 1.8 ppm Ag, 290 ppm U, 1100 pm Th, and 300 ppm W occur in the eastern part of the Claims. (Sample No. 79-WT-1225). The Mo, Ag, U and W contents are highly anomalous. This stream drains an area postulated to be underlain by biotite quartz-monzonite. One rock sample (JH-OXY-10) at the headwater contains 9 ppm U and 40 ppm Th, both of which are anomalous.

7.3 - Stream Sediment Geochemistry (PLAN 4,7,8)

Sediment samples were collected from all streams draining the OXY Claims and were analysed for Cu, Mo, Pb, Zn, U, Th and Ag.

(1) 62 to 148 ppm Cu occurs over a length of 1000 ft. (300), in the stream draining the ultramafic body in the NW corner of the claims. Spot highs of 162 and 225 ppm Zn, 10 ppm Mo and 158 ppm U (extremely high) also occur within the stream. The stream bed is underlain by abundant talus material derived from the ultramafic body, thus the source may not be in situ. An intense Cu soil anomaly occurs at the head of the stream.

(2) 40 to 58 ppm Cu occur in 3 small, closely spaced creeks draining quartz-monzonite in the southeast corner of the claims. Slightly anomalous Cu and Mo contents continue up to 3/4 mile downstream from the headwater.

(3) 86 ppm Cu, 136 ppm Zn, 18.5 ppm U and 0.8 ppm Ag occur in one sample draining the central portion of the claims underlain by quartzite and quartz-monzonite which contain anomalous U. (4.5 to 23 ppm)

(4) 8 to 11 ppm Mo occur in samples from the far eastern part of the claims.

7.4 - Stream Water Geochemistry (PLAN 4,9)

Stream water samples were collected at each sediment site and analysed in the field for pH and specific conductivity (S.C.) and in the laboratory for U, F and As.

(1) 0.6 to 1.6 ppb U occur in waters in the NW corner of the claims draining the ultramafic body.

(2) 1.0 to 1.2 ppb U occur in waters from the far eastern area of the claims.

(3) pH in waters draining ultramafic rocks ranges from 7.8 to 8.1. pH in waters draining quartz-monzonite range from 7.4 to 7.5. These results are expected given the lithology.

7.5 - Soil Geochemistry (PLAN 4,10,11)

Soil samples were collected from talus fines along traverses paralleling talus slopes.

(1) 114 to 210 ppm Cu, 8 to 10 ppm Mo and 68 to 435 ppm Zn occur over a traverse length of 1200 ft. (360m), in the western part of the claims at the base of the ultramafic mass.

(2) 7 to 45 ppm U occurs in a zone up to 6000 ft. (1830m) long and 2000 ft. (610m) wide underlain by biotite quartz-monzonite in the north central portion of the claim groups. Single station, low level Mo and Cu anomalies occur within this zone.

VIII. - CONCLUSIONS

(1) The OXY Claims are underlain by biotite quartz-monzonite, quartzite and an ultramafic mass comprising serpentinized dunite and peridotite. Templeman-Kluit (1977) has proposed that Upper Paleozoic quartzite has been intruded by Cretaceous quartz-monzonite with Upper Paleozoic ultramafic thrust over this assemblage from the southwest. This is compatible with other areas in the Cordillera and data collected by Canadian Oxy.

(2) Anamalous contents of recoverable uranium occur in quartzite and quartz-monzonite underlying the central portion of the claims. High U/Th ratios in quartzite samples indicate enrichment of uranium during sedimentation and/or enrichment during intrusion of the quartz-monzonite. The latter seems unlikely as quartz-monzonite has very low U/Th ratios.

(3) A broad, moderate U soil anomaly occurs downslope from the area of high U in rocks. An intense Cu soil anomaly which contributes to a strong Cu stream sediment anomaly occurs in talus material derived from the ultramafic mass in the NW corner of the Claim Group. separate stream sediment Cu and Mo anomalies occur in the eastern part of the Claims and drain leucocratic quartz-monzonite.

(4) Potential mineralization on the OXY Claims is not obvious but may include U within veins in quartz-monzonite or near the quartz-monzonite - quartzite contact and/or Cu-asbestos mineralization associated with the ultramafic body.

IX - RECOMMENDATIONS

(1) Topography limits systematic work over the OXY Claims. Geological mapping and prospecting with a scintillometer at a scale of 1" = 400' and using air photo blow-ups should be conducted. The ultramafic-quartz monzonite-quartzite contacts should be delineated.

(2) Contour soil geochemistry should be conducted using a sample interval of 200 ft. (60m). This will require air photo blow-ups and expertise in their interpretation on the part of the samplers.

(3) The central portion of the claims appears to be of most interest from the standpoint of potential U mineralization and should receive priority over the area underlain by the ultramafic body.

Respectfully submitted

Eric James Sacks, M.Sc.

TORONTO, Ontario

December, 1979

APPENDIX I

Analytical Results

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 985-0648 984-0221
AREA CODE: [redacted] 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49345
INVOICE NO. 32463 Th - 32606
RECEIVED Aug. 3/79
ANALYSED Sept.7/79

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

ATTN: WATSU-OXY-Heavy Minerals (E. Sacks)

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag	PPM Sn	PPM W	PPM U	PPM Th N.A.
79 WT 1225	84	12	122	166	1.8	8	300	290	1110
79 WT 1231	70	8	14	164	0.8	15	300	11.0	50

	Total	-10 fraction	-10 magnetic	-10 Non mag.
79 WT 1225	466	420	8.33	7.86
79 WT 1231	685	547	0.94	81.81

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Bichle

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49336
INVOICE NO. 31900
RECEIVED Th-32440 Aug. 3/79
ANALYSED Aug. 15/79

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

ATTN: PROJECT: Watsu-Oxy-Stream Silts CC: E. Sacks

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag	PPM U	PPM Th
79WT1012	16	1	6	68	0.4	158	60
1013	148	10	10	225	0.2	16.5	7
1014	92	2	8	162	0.4	20.0	6
1015	62	1	6	84	0.2	6.5	7
1160	86	2	12	136	0.8	18.5	16
1164	58	4	8	120	0.2	7.5	9
1165	72	1	40	110	0.2	1.0	8
1167	40	1	20	92	0.2	3.5	11
1221	6	8	8	42	0.1	17.0	39
1222	4	11	6	32	0.4	11.0	47
1223	4	8	6	46	0.4	11.5	47
1224	20	2	16	78	0.4	9.0	48
1225	36	2	16	94	0.4	3.5	18
1226	26	3	16	80	0.2	11.0	34
1227	18	4	10	74	0.2	7.0	32
1228	36	2	14	90	0.2	3.0	20
1229	28	4	14	102	0.4	16.5	45
1230	32	4	16	96	0.2	9.5	34
79WT1231	36	2	6	88	0.2	4.5	17

CERTIFIED BY: Hart Bichler

CHEMEX LABS LTD.

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49356
INVOICE NO. 31746
RECEIVED August 3, 1979
ANALYSED August 10, 1979

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

ATTN:

WATSU - OXY - WATERS
c.c. Penticton

SAMPLE NO. :	PPB U	PPB F	PPB As
79 WT 1160	0.6	25	<2
1164	0.4	20	<2
1165	0.4	10	<2
1012	1.4	70	<2
1013	0.6	50	3
1014	1.0	55	3
1015	1.6	70	3
1221	1.2	20	<2
1222	1.0	20	<2
1223	1.0	20	<2
1224	1.0	25	<2
1225	0.8	20	<2
1226	0.6	20	<2
1227	0.4	20	<2
1228	0.6	20	<2
1229	0.8	20	<2
1230	0.6	20	<2
79 WT 1231	0.2	50	2

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Bichler

CHEMEX LABS LTD.

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NORTH VANCOUVER, B.C.
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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49329

INVOICE NO. 31828

Th-32440

RECEIVED Aug. 3/79

ANALYSED Aug. 13/79

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

ATTN: WATSU-OXY-Soil CC. E. Sacks

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag	PPM U	PPM Th
79 WT 1016	200	8	34	435	0.4	3.0	5
1017	210	10	28	345	0.4	4.0	4
1018	114	1	10	68	0.1	3.5	7
1019	48	1	6	60	0.1	14.0	25
1020	4	1	12	64	0.1	12.0	100
1021	10	1	26	126	0.1	7.0	121
1022	26	2	8	68	0.1	3.5	66
1023	20	2	4	30	0.1	2.5	15
1151	8	1	8	64	0.1	4.0	60
1152	14	5	8	60	0.1	45	51
1153	8	2	12	42	0.1	21.0	57
1154	10	6	8	60	0.1	10.0	48
1155	8	1	10	32	0.1	3.5	26
1156	8	3	6	38	0.1	7.5	42
1157	38	3	8	52	0.1	16.5	25
1158	36	2	2	14	0.4	17.0	15
1159	6	1	1	16	0.1	1.0	17
1161	22	4	26	68	0.2	10.5	65
1162	2	1	8	20	0.1	3.0	44
1163	4	1	2	10	0.1	0.5	8
79 WT 1166	2	1	1	4	0.2	0.5	5

CERTIFIED BY: Hart Bichler

CHEMEX LABS LTD.

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49361
INVOICE NO. 31943
Th-32440
RECEIVED Aug. 3/79
ANALYSED Aug. 16/79

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

CC. E. Sacks

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag	PPM U	PPM Th	PPM Sn	PPM W
JH-OXY-1	52	1	1	16	0.2	1.0	< 1	1	1
2	8	2	4	22	0.2	1.0	< 1	1	1
3	6	1	1	52	0.4	< 0.5	< 1	1	3
4	2	1	2	16	0.1	< 0.5	< 1	1	1
5	46	2	2	28	0.1	23.0	6	1	1
6	4	1	4	40	0.1	4.5	51	3	1
7	26	1	4	62	0.1	6.5	6	1	3
8	8	1	10	10	0.1	14.0	39	1	3
9	62	1	2	28	0.1	< 0.5	3	1	1
9a	28	1	4	52	0.1	< 0.5	4	2	1
JH-OXY-10	8	1	16	40	0.1	9.0	40	1	1
ES-CLO-1a	4	2	4	8	0.1	< 0.5	31	1	1
1b	4	3	12	8	0.1	0.5	30	1	1
2	12	1	16	4	0.1	< 0.5	21	1	1
3	10	2	10	8	0.4	1.0	35	1	1
4	98	2	2	50	0.2	0.5	4	1	1
5	16	1	120	8	2.0	1.0	14	1	1
6a	52	1	4	22	0.1	0.5	2	1	1
ES-CLO-6b	8	1	2	50	0.1	0.5	5	1	1
JH-Tier-1	2	3	16	2	0.2	0.5	16	1	2
2	102	1	4	88	0.1	0.5	4	1	1
3	82	2	2	46	0.2	1.0	4	1	1
4	6	2	10	74	0.2	6.5	77	1	4
5	4	2	14	8	0.1	1.5	35	1	2
6a	6	2	26	14	0.4	0.5	11	1	2
6b	4	1	2	24	0.1	1.5	2	1	1
7	2	1	1	6	0.1	1.5	< 1	1	1
8	4	1	8	6	0.2	0.5	4	1	1
9	40	1	10	50	1.0	0.5	6	1	1
10	4	1	2	2	0.2	< 0.5	2	1	1
JH-Tier-11	4	4	48	6	1.2	1.5	9	1	1
JH-Bigox-1	6	1	2	60	0.2	2.0	21	1	1
2	4	1	1	90	0.1	1.5	19	1	1
3	2	1	8	28	0.2	3.5	54	2	200
4	2	1	4	28	0.2	7.5	38	2	2
5	2	1	6	14	0.1	10.0	30	1	1
JH-Bigox-6	Missing	-	next page		-	-	< 1	-	-
Bigox-1	4	1	4	20	0.1	1.5	33	1	8
2a	2	1	8	10	0.1	9.0	39	1	20
ES-Bigox-2b	6	2	14	22	0.6	25.5	40	1	20

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Bichler

APPENDIX II - ROCK DESCRIPTIONS AND TRACE ELEMENT CONTENTS

Rock Number	Name	Description	Analyses (ppm) Cu	Mo	Pb	Zn	Ag	U	Th	Sn	W	U/Th
JH-OXY-7	Quartzite	V.fine-grained, impure, black, banded	26	1	4	62	0.1	6.5	6	1	3	1.1
-8	Granite to Quartz-Monzonite	Med. grained, Ksp(60%), plag (30%), quartz (10%), bi (5%); massive, leucocratic limonite stain	8	1	10	10	0.1	14	39	1	3	.4
-9	Fine Sandstone to Siltstone	V. fine-grained, black, massive, minor vuggy weathering.	62	1	2	28	0.1	.5	3	1	1	-
-9a	Brecciated Quartzite	Angular beige qtzite fragments in darker matrix, v. fine-grained, matrix appears to be quartzose.	28	1	4	52	0.1	.5	4	2	1	
-10	Quartz-Monzonite	Coarse-grained, Ksp(50%) plag (20%) quartz (20%), bi (5%); leucocratic, massive.	8	1	16	40	0.1	9	40	1	1	.2

APPENDIX II - ROCK DESCRIPTIONS AND TRACE ELEMENT CONTENTS

Rock Number	Name	Description	Analyses (ppm) Cu	Mo	Pb	Zn	Ag	U	Th	Sn	W	U/Th
JH-OXY-1	Peridotite	V. fine-grained, massive, slight development of sepentine slickensides, v. dk. grey to black.	52	1	1	16	0.2	1	1	1	1	-
-2	Peridotite	V. fine-grained olivine with sepentine on shear surfaces as slickensides, v. dark green .	8	2	4	22	0.2	1	1	1	1	-
-3	Sepentinized Peridotite	Fibrous serpentine asbestos developed in sheared equivalent of JH-OXY-2, crenulation of fibrés.	6	1	1	52	0.4	.5	1	1	3	-
-4	Sepentenite	Light green to white radiating clusters of euhedral sepentine crystals developed in equivalent of JH-OXY-3	2	1	2	16	0.1	.5	1	1	1	
-5	Quartzite	V. fine-grained, impure, slight banding, possible muscovite flakes	46	2	2	28	0.1	23	6	1	1	3.8
-6	Biotite Quartz-Monzonite	Coarse-grained, euhedral K-sp, plag;Ksp(35%), plag (35%), biotite (5-10%) ;quartz (35%) slightly megacrystic with K-spar euhedra slightly larger	4	1	4	40	0.1	4.5	3	1	.08	

Appendix III - Sampling and Laboratory Procedures

I. SAMPLING PROCEDURES

A) Heavy Minerals

1. A sample site is selcted which exhibits maximum sorting of stream bed material. Active (below water) or previously active (dry now but previously below water) sites may be chosen. Leading edges or sides of gravel bars with large boulders are most attractive. In practice, the ideal case is rare and one chooses the best possible site.

2. Gravel and cobble material is shoveled into a large (18" to 24") gold pan into which 1/4" holes have been drilled. The material is vigourously shaken in still water so that - 1/4 in. material passes the screen into a second, matching pan. Enough -1/4 in. material is collected to fill an 18" x 24" poly bag (usually one large pan or two smaller ones). The -1/4" material is returned to camp.

3. The - 1/4 in. material is panned to achieve a concentrate of heavy minerals and aggregates containing heavy minerals. Approximately 80% of the original material (20 - 25 lbs) is discarded while a 1 - 2 lb. concentrate is obtained. The concentrate is sealed in a plastic or cloth bag (cloth is preferred as it allows

the sample to dry, thus reducing shipping weight) and then sent to the laboratory for geochemical analysis.

B) Stream Sediment

1. A presently or previously active stream site is selected which exhibits minimum sorting ie. quiet water, and accumulation of fine sandy and silty material. If the stream is too active, material can be obtained from bank-moss which acts as a trap, or by digging out the lee of large boulders.

2. Three to four handfuls of material is collected and after squeezing to remove excess water is placed in high wet-strength, heavy duty, prenumbered kraft envelopes. The samples are dried in the field and then sent to the laboratory for geochemical analysis.

C) Stream Water

1. A 4 oz. poly bottle is rinsed with the sample site water at least three times then filled fully and tightly capped. The sample is tested in the field for pH and specific conductivity, then sent to the laboratory for geochemical analysis.

2. Care should be taken to avoid contamination by always collecting waters up-stream from a heavy mineral or sediment sample site.

D) Soil

1. 'B' horizon or talus fine material is sampled.

2. Three to four handfuls of material are collected into heavy duty, high wet-strength kraft envelopes which are dried in the field and then sent to the laboratory for analysis.

E) Sample Site Information Card

1. At each soil or stream sample site, an 80 column field data card is completed. The sampler records such information as sample number, location and type, depth of stream, sample composition, vegetation, drainage, etc. Separate cards are used for stream and soil samples in order to record pertinent information.

II. Laboratory Procedures

A. Sample Preparation

i) Heavy Minerals

1. Samples dried and weighed.

2. Screen - 10 mesh material from sample and weigh; weigh and retain +10 mesh material left on screen.

3. Use -10 mesh fraction for heavy liquid separation.

4. Transfer -10 mesh (fine) fraction into a 1000 ml. separatory funnel containing 200 mls. of tetrabromoethane (S.G. 2.96).

5. Shake sample gently in heavy liquid. Particles of fines adhering to sides of the separatory funnel can be washed into the heavy liquid by slowly rotating the funnel at an oblique angle. The "heavies" (S.G. $>$2.96) will slowly settle to the bottom of the heavy liquid.

6. Drain the "heavies" into a small filter funnel. Drain excess heavy liquid and light materials into a separate filter funnel. Collect all heavy liquid into a waste receiving bottle.

7. Save light minerals (S.G. $<$2.96). Wash "heavies" fraction with methanol to remove residual tetrabromoethane. Use the same procedure on light minerals fraction. Dry both fractions and weigh. Retain the "lights" in a suitable sealed container. Save 0.5 gm of "heavies" in a plastic vial for visual examination.

8. Pulverize the remaining "heavies" in an agate mortar and pestle and homogenize before weighing for analyses.

9. Analyse the "heavies" powder for appropriate elements. The number of elements analysed for is determined by the amount of "heavy" material obtained in separation.

ii) Stream Sediments

1. Samples are sorted and dried at 50°c for 12 to 16 hours.

2. Dried material is then screened to obtain the -80 mesh (177 micron) fraction. The rest of the material is discarded.

3. -80 mesh fraction material is weighed and analysed for appropriate elements.

iii) Soils

Same procedure as for stream sediments.

iv) Rocks

1. Entire sample is crushed.

2. If necessary (>250 gms.). The sample is split on a Jones splitter, the reject is retained for a short period.

3. The split fraction is pulverized in a ring grinder such that 90% passes a 200 mesh (74 micron) sieve.

4. The -200 mesh material is weighed and analysed for the appropriate elements.

v) Waters

See individual element descriptions for U and F.

B. Elemental Analyses

i) ppm Copper, Lead, Zinc, Silver, Molybdenum (Atomic Absorption)

1. A 1.0 gm portion of -80 mesh soil or stream sediment or -200 mesh rock flour or pulverized "heavies" is digested in concentrated, hot, perchloric - nitric acid ($HClO_4$-HNO_3) for 2 hours.

2. Digested sample is cooled and made up to 25 mls. with distilled water.

3. Solution is mixed and solids allowed to settle.

4. Cu, Pb, Zn Ag and Mo are determined by atomic absorption, using background correction for Pb and Ag analyses.

Element	Bkgd. Corr.	Flame Type	Wave Length hm	Detection Limit	Chemex Standard	± 1 Std. Deviation
Cu	No	A	324.7	1 ppm	71 ppm	± 3
Pb	Yes	A	217.0	1 ppm	59 ppm	± 1
Zn	No	A	213.8	1 ppm	52 ppm	± 3
Ag	Yes	A	328.1	0.2 ppm	8.5 ppm	± 0.5
Mo	No	N	313.3	1 ppm	25 ppm	± 1

A = Air acetylene flame.

N = Nitrous oxide - acetylene flame.

ii) ppm Tin (Sn) (Atomic Absorption)

1. A 1.0 gm sample of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is scintered with ammonium iodide.

2. The resulting tin-iodide is leached with a dilute HCl - ascorbic acid solution.

3. The TOPO complex is then extracted into MIBIC (Methyl isobutyl ketone) and anaylsed via atomic absorption.

4. Detection limit: 1 ppm Sn

iii) ppm Tungsten (W) (Colourimetric)

1. 0.5 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is fused with potassium bisulfate and leached with HCl.

2. The reduced form of W is complexed with toluene 3, 4 dithiol and extracted into an organic phase.

3. The resulting colour is visually compared to similarly prepared standards. (Colourimetric method)

4. Detection limit: 2 ppm W

iv) ppb Gold (Au) (Atomic Absorption)

1. A 5 gm sample of -200 mesh rock flour or pulverized "heavies" is ashed at 800^{o}c for 1 hour.

2. Ashed material is digested with aqua regia twice to dryness.

3. Digested material is taken up in 25% HCl.

4. Au is extracted as the bromide into MIBK and analysed via atomic absorption.

5. Detection limit: 10 ppb Au

v) ppm Thorium (Th) (Neutron Activation)

1. 1 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is weighed into a polyethelene vial and heat sealed.

2. Samples, along with standards, are then irradiated

for sufficient periods to receive a neutron dose of 1-3 X 10^{10} to $10^{15}/cm^2$.

3. Following irradiation, samples are cooled for at least one week and thorium determined by the measurement of its characteristic gamma ray, using a semiconductor (Ge (Li)) detector.

4. Detection limit: 1 ppm Th

vi) Uranium (U) (Fluorimetry)

A) Uranium in soils, stream sediments, "heavies", rocks.

1. 1 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is digested with hot, $HClO_4$-HNO_3 to strong fumes of $HClO_4$ for approximately 2 hours.

2. The digest is diluted to volume and mixed.

3. An aliquot is extracted into MIBK with the acid of an aluminum nitrate-tetrapropyl ammonium hydroxide salting solution. (TPAN

4. Uranium in the MIBK is determined by evaporating a portion of the MIBK in a platinum dish and fusing with a mixture of $Na2CO_3$-K_zCO_3-NaF.

5. The fluorescence of the fused flux is measured to determine the uranium content.

6. Detection limit: 0.5 ppm U

B) Uranium in Water

1. A portion of the sample is filtered to remove sediment (if necessary), is acidified and then evaporated to dryness.

2. Residue is leached with a small volume of HCO_3.

3. Uranium in the leachate is extracted into MIBK, with the aid of TPAN salting solution.

4. Uranium is determined as for solid materials, above by fluorimetry.

5. Detection limit: 0.2 ppb U

vii) Fluorine (F) (Specific Ion Electrode)

A) F in soils, stream sediments, rocks, "heavies".

1. 0.25 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is fused with a 2:1 $NaCO_3$-KNO_3 mixture.

2. The melt is leached with water and citric acid, adjusted to pH 5.5 and the activity measured with a fluoride specific ion electrode.

3. Detection limit: 10 ppm F

B) F in Waters (Potentiometric)

1. An aliquot of the sample is filtered and treated with an equal volume of Total Ionic Strength Adjustment Buffer (TISAB) consisting of glacial acetic acid, sodium chloride and cyclohexanediamine tetraacetic acid.

2. The resulting solution is stirred for 3 minutes to allow the fluoride electrode to stabilize.

3. The F concentration is read from a specific ion meter which is calibrated frequently with freshly prepared standard fluoride solutions.

4. Detection limit: 0.02 ppb F

viii) <u>ppb Arsenic (As) (Atomic Absorption)</u>

a) <u>As in waters</u>

1. An aliquot of water is acidified with HCl and then reduced with potassium iodine to reduce As (V) to As (III).

2. A portion of this solution is further reduced with sodium borohydride to arsine, AsH_3.

3. The volatile arsine is swept into a heated cell in an atomic absorption spectrophotometer and decomposed to free arsenic to determine the arsenic concentration.

4. Detection limit: <u>2 ppb As</u>

ix) <u>pH</u>

1. pH in waters was determined in the field, using a portable pH meter.

2. The meter was standardized by means of buffer solutions, every 10th sample to minimize meter drift.

x) <u>Specific Conducitvity (S.C.)</u>

1. S.C. in waters was determined in the field, using a portable S.C. meter.

2. The electrode was washed in a standard water, after each determination, to minimize and standardize contamination.

APPENDIX IV

COMMENTS OF R.H. WALLIS - Examination of OXY Claims

OXY Claims (1-48) 105F 7W½   July 31st, 1979

Commodity (U-W-Mo-F) RGW, EJS, JH

Wooded in the main vlleys; the main G.S.C. anomalous creek valley is greatly filled with extensive lateral moraines and rock slides of vividly, tan coloured, serpentinized ultramafic material (easily mistaken for gossan) creating a sampling problem in 1980, need to map out surficial deposits. The valleys are steep, with extensive talus slopes, and abundant rugged, rocky bluffs and cliffs, not easy ground for systematic geochem or scint coverage. Relief almost 2000 feet. Need good blow-up photos (no 1:50,000 topo map available) to be able to satisfactorily map the geology.

Geology - as shown by Templeman-Kluit (1977) G.S.C. O.F 486, this is complex country, a widely variable group of meta-volcanics and metasediments (CPav) = "resistant, dark grey weathering, dark green, fine grained amphibolite and greenstone, usually massive but well foliated near basal thrust". These are intruded by the Nisultlin Batholith and its many variable contact phases. Thrust?, intrusive? bedded? on the meta-sediments is a massive "piece" of serpentenized ultramafic CPaub with many widely variable rock-types. CPaub = resistant, dun brown weathering, dunite, peridotite and pyroxenite, with serpentenized equivalents, includes CPas, yellow green and grey weathering recessive serpentenite. This is??intruded by the Nisutlin batholith (Kpgm) = "moderately resistant, light grey weathering, homogeneous, porphyritic (pinkish K-feldspar) medium-grained, biotite quartz-monzonite".

RHW, EJS, JH, visited perthite megacrystic, biotite quartz-monzonite (450 cps) intrusive into limonitic meta-quartzite (?); then serpentinized peridotite sitting in (?) or on (?) the meta-quartzite, the peridotite has innumerable hydrated/marginal phases, and is cut(?) by basalt dykes, and many different generations of micro-diorite, which are (?) part of the Nisutlin batholith.

APPENDIX V

REFERENCES

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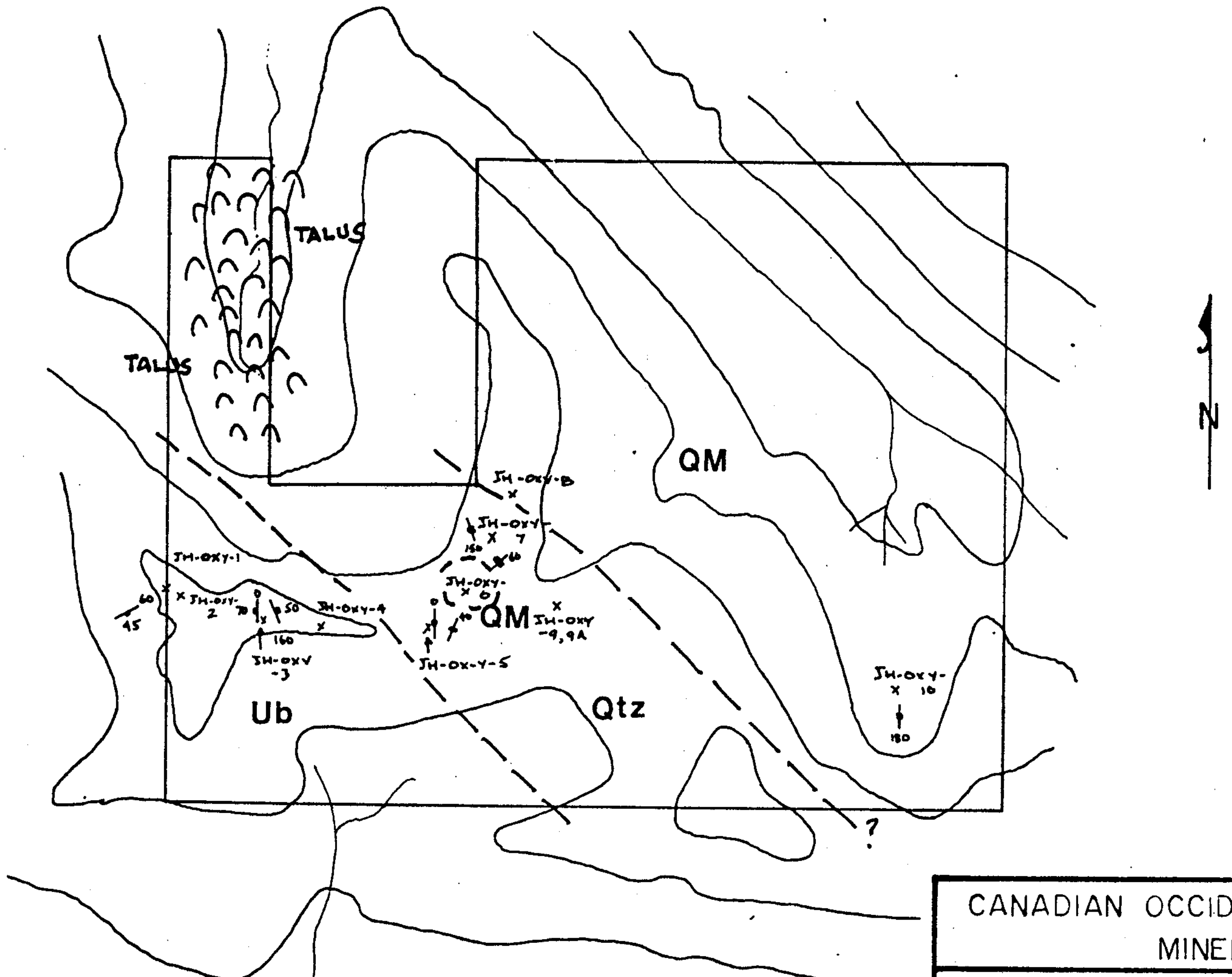
Travis, R.B. (1955): Classification of Rocks; Colorado School of Mines Quarterly, V.50, No. 1, January, 1955



Legend

QM : Biotite quartz monzonite

Ub : Ultrabasic; peridotite, serpentinite

Qtz : Quartzite, siltstone

— — : Geological contact (assumed)

—+— —⊥— : Jointing (vertical, inclined)

Talus material

PLAN I

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

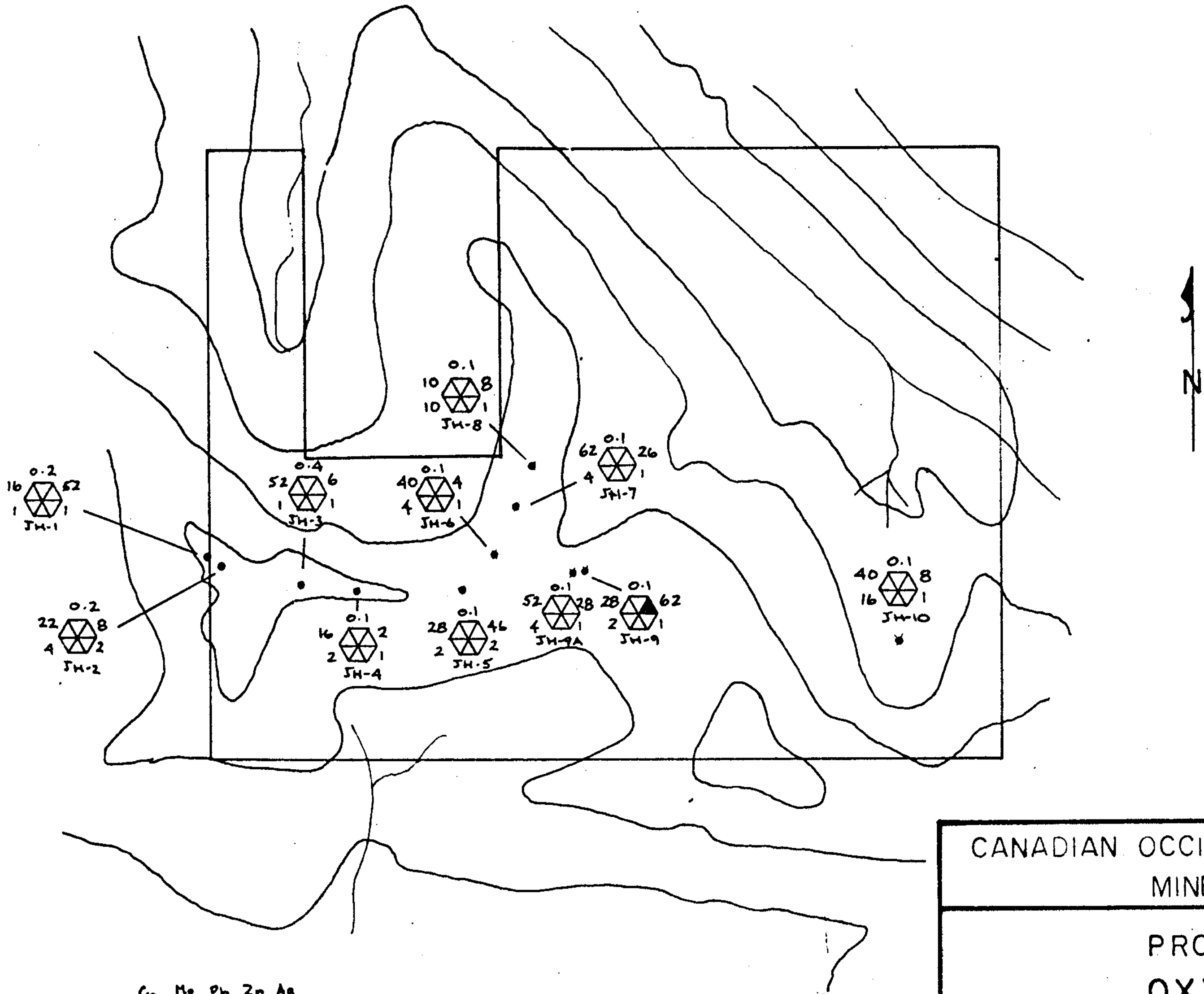
OXY CLAIMS

YUKON TERRITORY

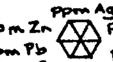
GEOLOGY

Scale 1" = 2640' (1/2 mile)

September, 1979



	Cu	Mo	Pb	Zn	Ag	
Poss. Anomalous	-	-	-	-	-	
Prob Anomalous	60	3	25	100	0.6	



PLAN 2

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

OXY CLAIMS

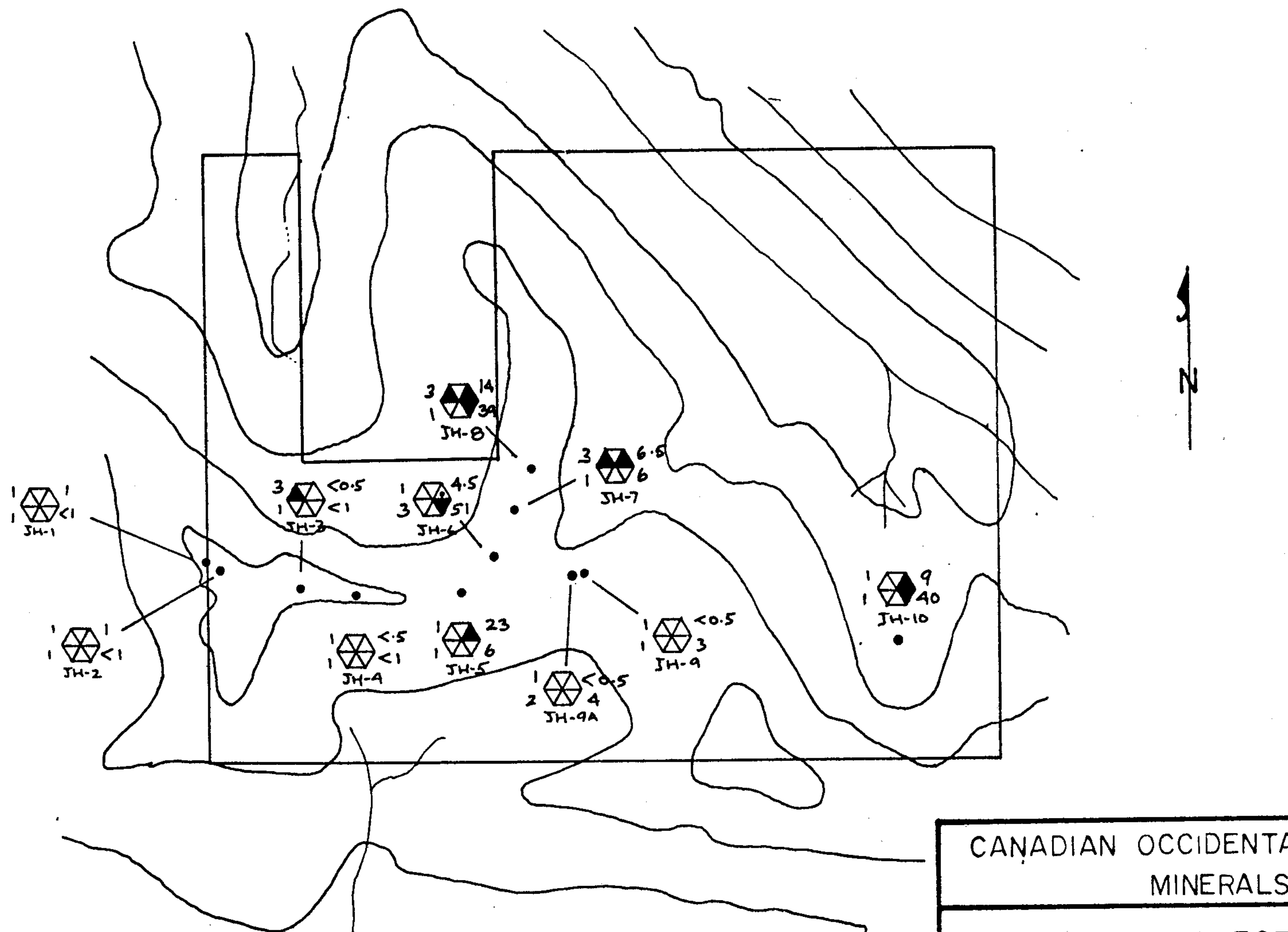
YUKON TERRITORY

ROCK GEOCHEMISTRY

Cu - Mo - Pb - Zn - Ag

Scale 1" = 2640' (1/2 mile)

September, 1979



	U	Th	Sn	W		
Poss. Anomalous	3	-	-	-		
Prob Anomalous	5	15	4	3		

LEGEND

ppm W, ppm Sn, ppm U, ppm Th

Sample No.

PLAN 3

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

OXY CLAIMS

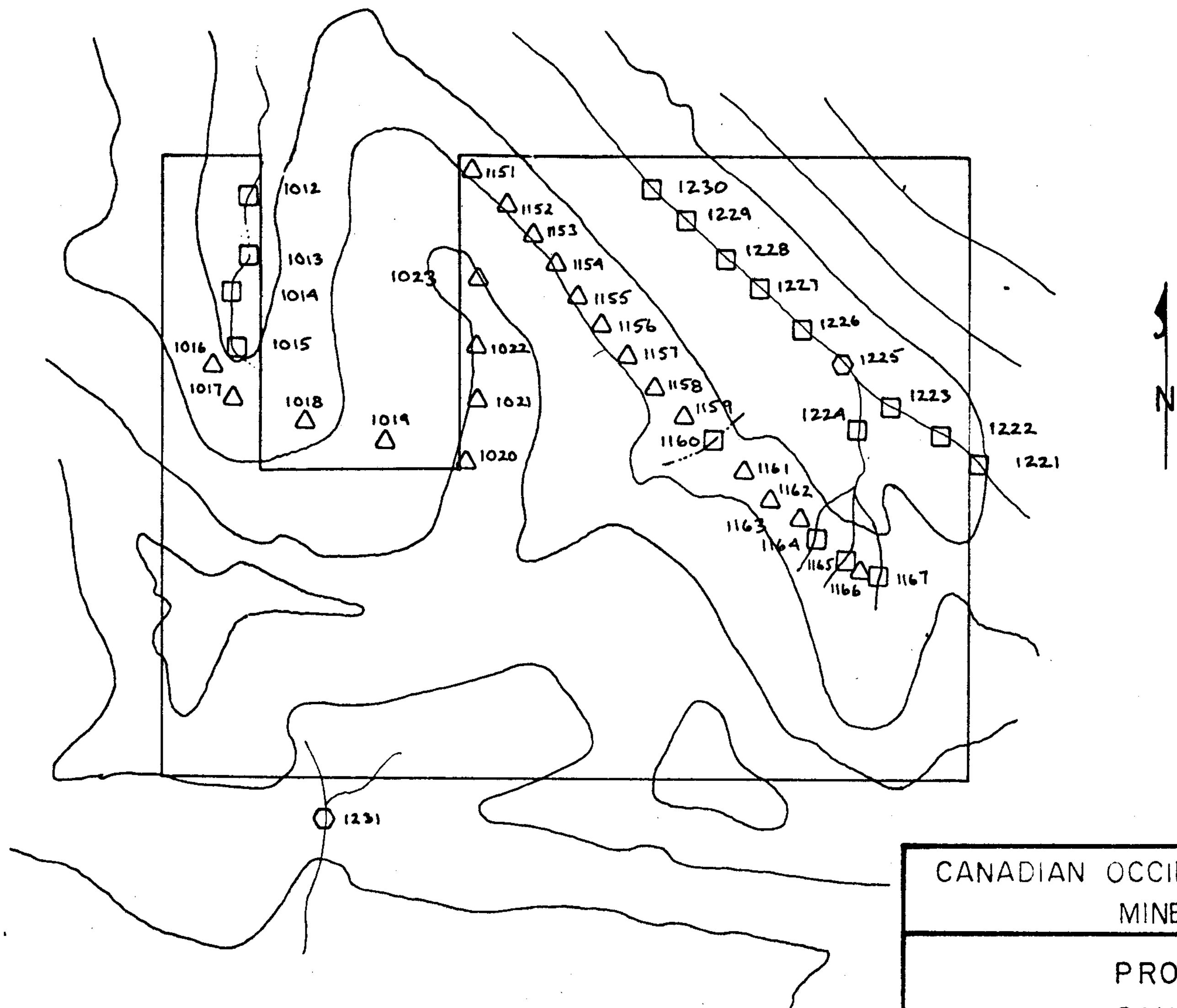
YUKON TERRITORY

ROCK GEOCHEMISTRY

U - Th - Sn - W

Scale: 1" = 2640' (1/2 mile)

September, 1979



LEGEND

△ SOIL

□ SEDIMENT & WATER

⬡ HEAVY MINERAL & SEDIMENT & WATER

PLAN 4

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

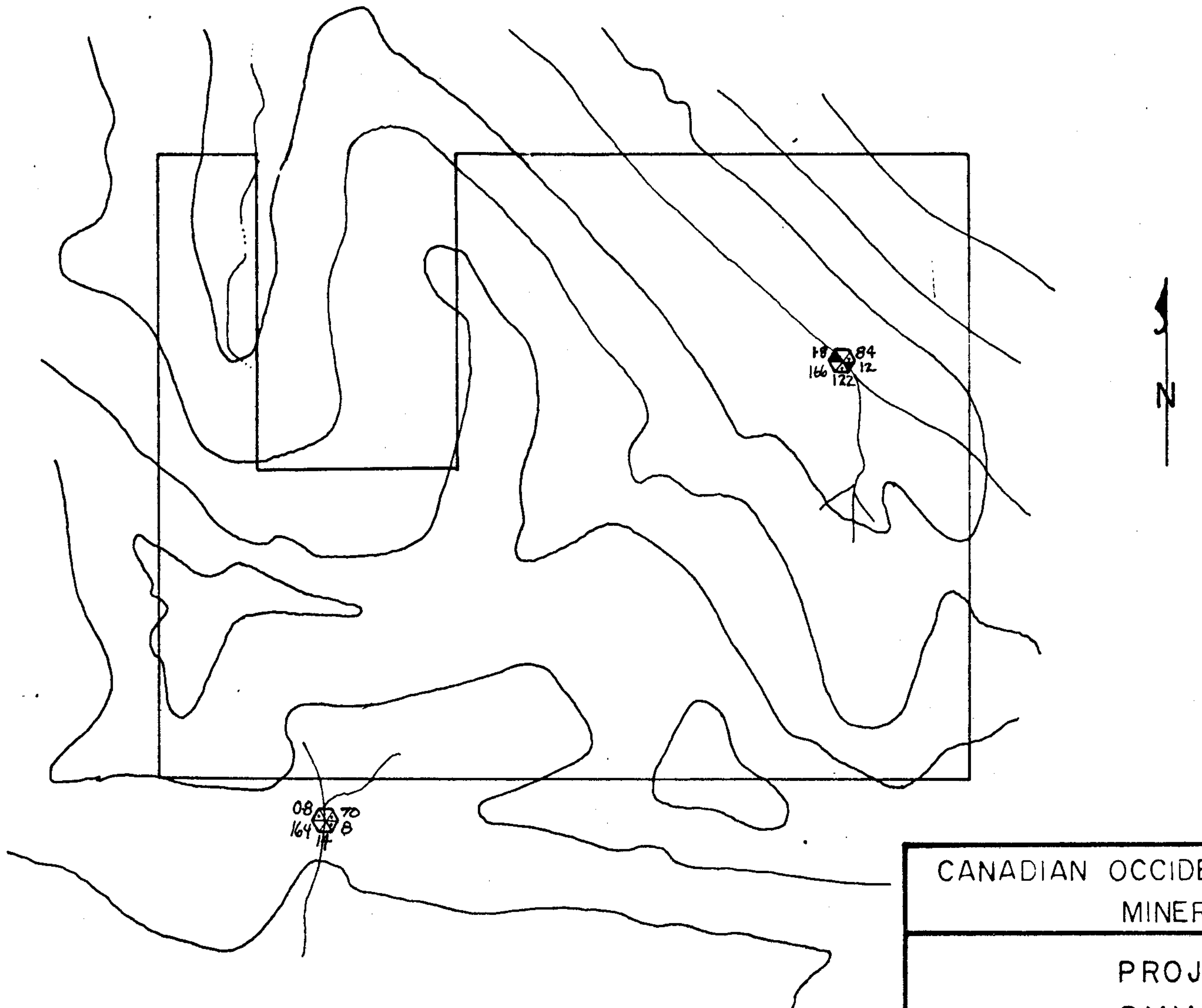
OXY CLAIMS

YUKON TERRITORY

SAMPLE LOCATION

Scale: 1" = 2640' (1/2 mile)

September, 1979



LEGEND

ppm Ag ⬡ ppm Cu
ppm Zn ppm Mo
ppm Pb

		Cu	Mo	Pb	Zn	Ag	
Poss. Anomalous	◸•	63	3.5	89	200	.38	
Prob. Anomalous	◢	165	8.5	280	440	.95	

PLAN 5

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

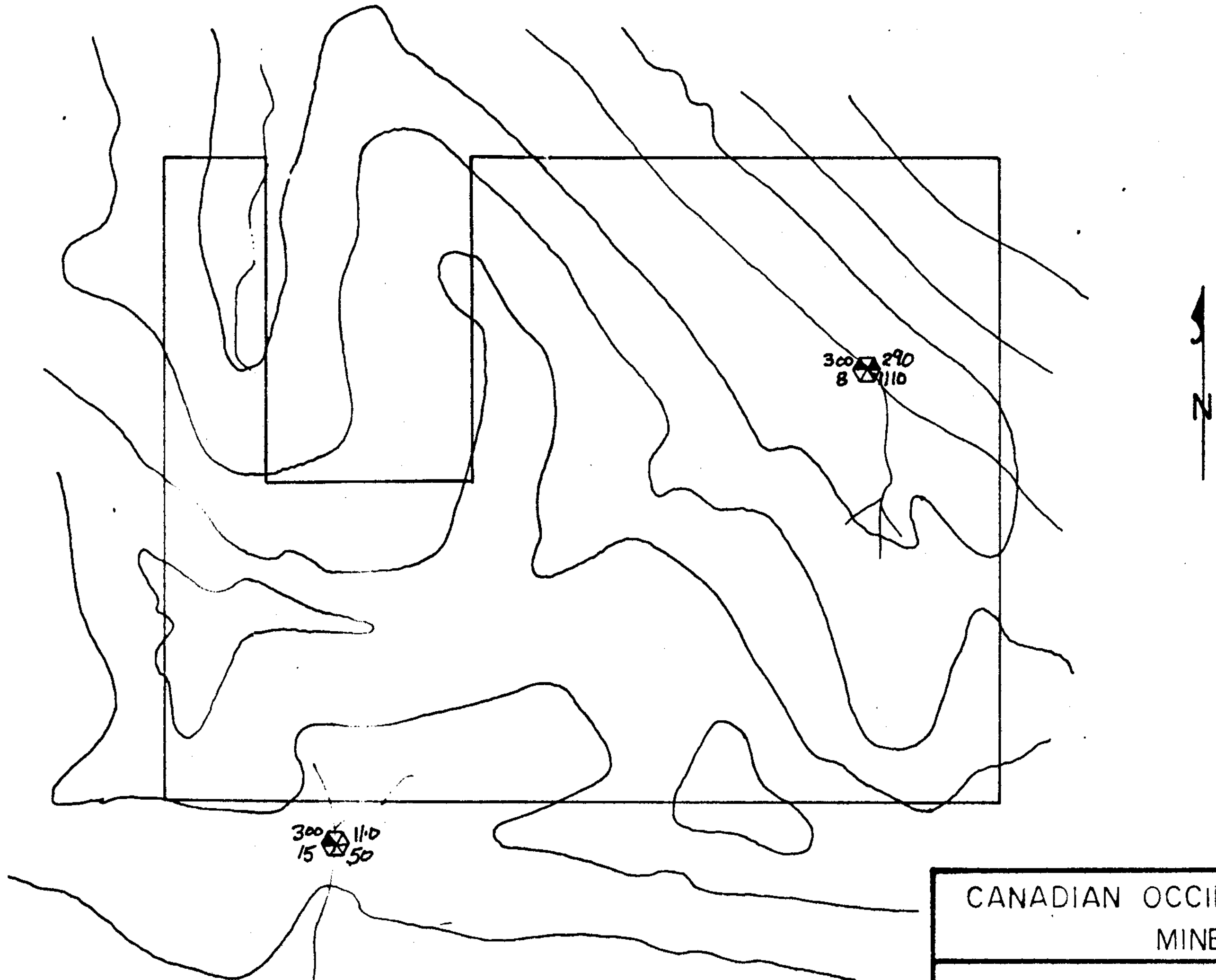
OXY CLAIMS

YUKON TERRITORY

HEAVY MINERAL GEOCHEMISTRY

Cu - Mo - Pb - Zn - Ag

Scale 1" = 2640' (1/2 mile) September, 1979



		U	Th	Sn	W		
Poss. Anomalous		26	330	38	60		
Prob. Anomalous		120	1200	300	160		

PLAN 6

LEGEND

ppm W ppm Sn ⊗ ppm U ppm Th

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

OXY CLAIMS

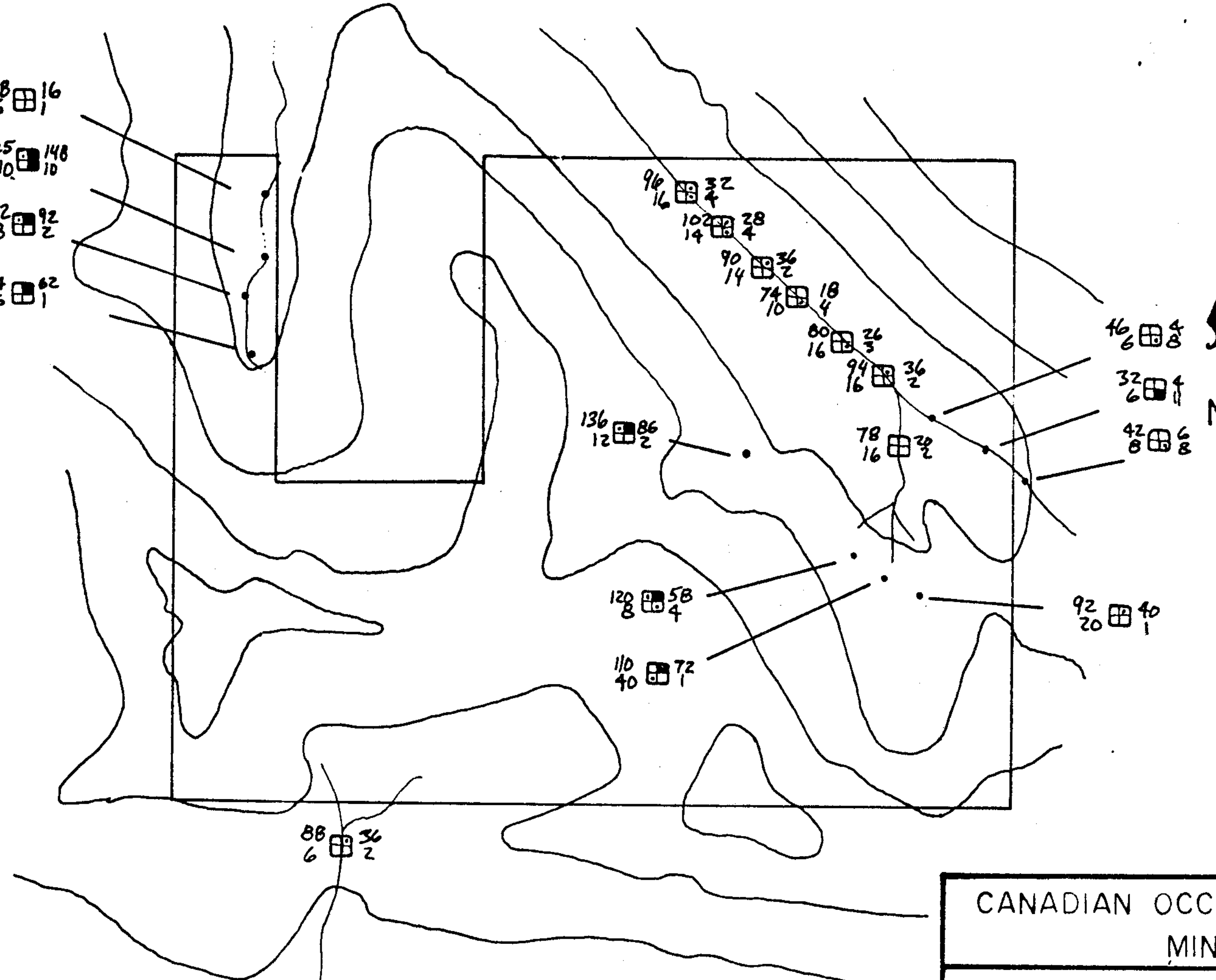
YUKON TERRITORY

HEAVY MINERAL GEOCHEMISTRY

U - Th - Sn - W

Scale: 1" = 2640' (1/2 mile)

September, 1979



LEGEND

ppm Zn ppm Pb ⊞ ppm Cu ppm Mo

	Cu	Mo	Pb	Zn		
Poss. Anomalous	28	3	21	115		
Prob Anomalous	54	11	59	320		

PLAN 7

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

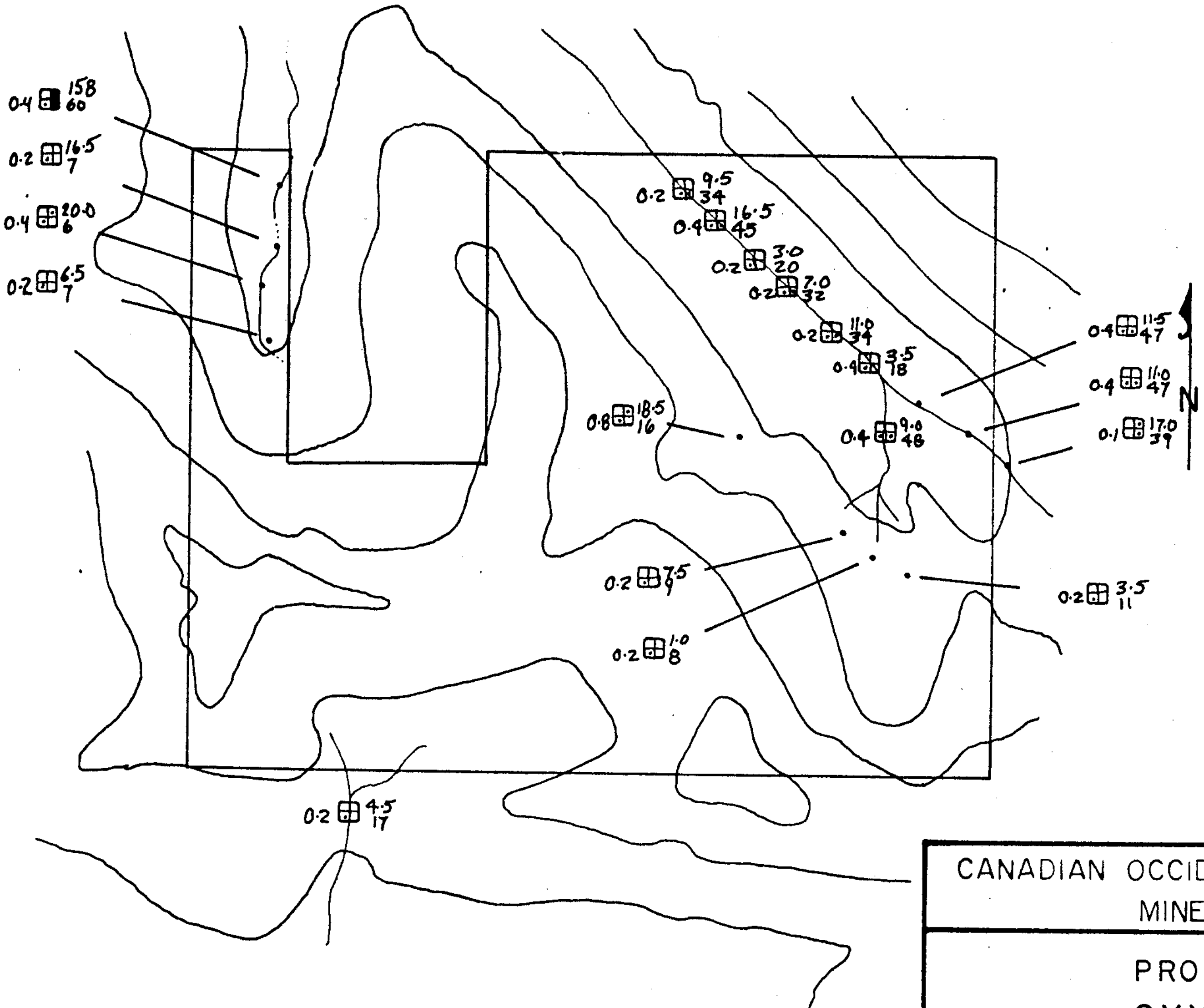
OXY CLAIMS

YUKON TERRITORY

STREAM SEDIMENT GEOCHEMISTRY

Cu - Mo - Pb - Zn

Scale 1" = 2640' (1/2 mile) September, 1979



LEGEND

ppm Ag ⊞ ppm U / ppm Th

		U	Th	Ag			
Poss. Anomalous		17	29	<.1			
Prob. Anomalous		38	50	1			

PLAN 8

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU

OXY CLAIMS

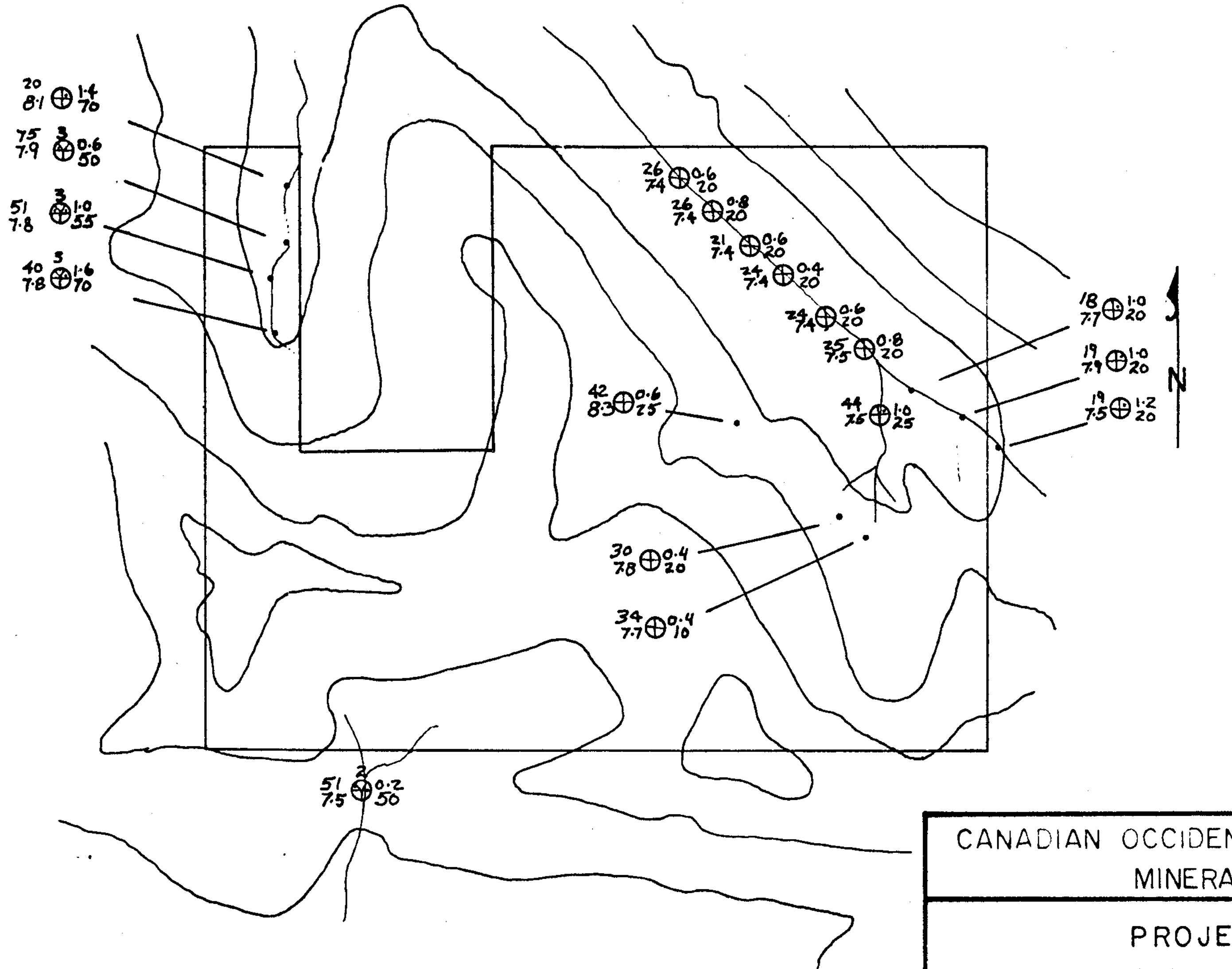
YUKON TERRITORY

STREAM SEDIMENT GEOCHEMISTRY

U - Th - Ag

Scale: 1" = 2640' (1/2 mile)

September, 1979



	U	F	As	S.C.		
Poss. Anomalous	·85	100	-	46		
Prob. Anomalous	2·5	210	-	100		

LEGEND

S.C. pH ⊕ ppb U ppb F ; As < 2ppb

ppbAs S.C. pH ⊕ ppb U ppb F

PLAN 9

CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

PROJECT WATSU

OXY CLAIMS

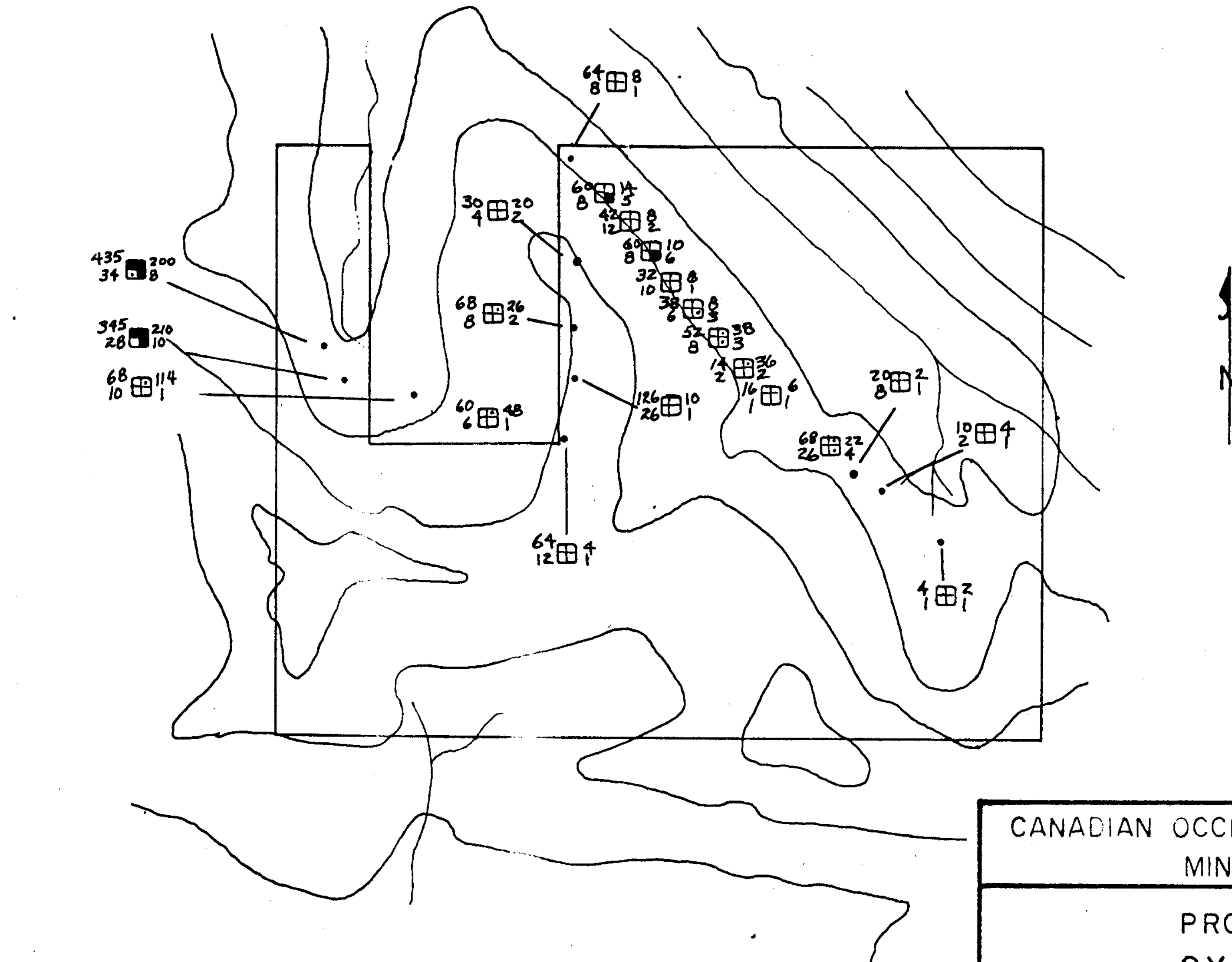
YUKON TERRITORY

STREAM WATER GEOCHEMISTRY

U - F - pH - SC. - As

Scale 1" = 2640' (1/2 mile)

September, 1979



	Cu	Mo	Pb	Zn		
Poss. Anomalous	22	2.5	32	115		
Prob. Anomalous	120	5	150	270		

LEGEND

ppm Zn / ppm Pb ⊞ ppm Cu / ppm Mo

PLAN 10

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

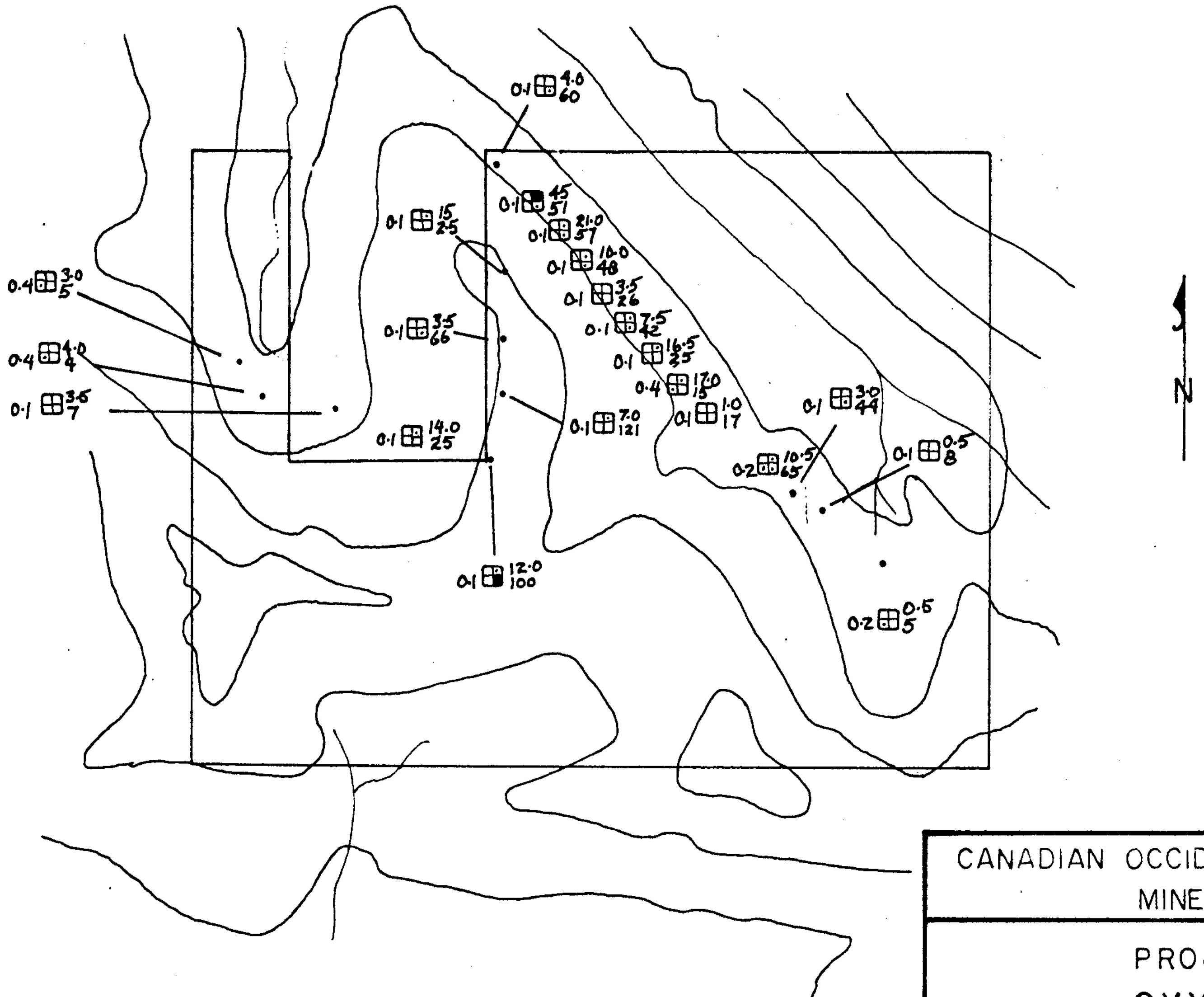
PROJECT WATSU
OXY CLAIMS
YUKON TERRITORY

SOIL GEOCHEMISTRY

Cu - Mo - Pb - Zn

Scale: 1" = 2640' (1/2 mile)

September, 1979



LEGEND

ppm Ag ⊞ ppm U / ppm Th

		U	Th	Ag			
Poss. Anomalous		7	36	0.1			
Prob. Anomalous		30	75	0.8			

PLAN 11

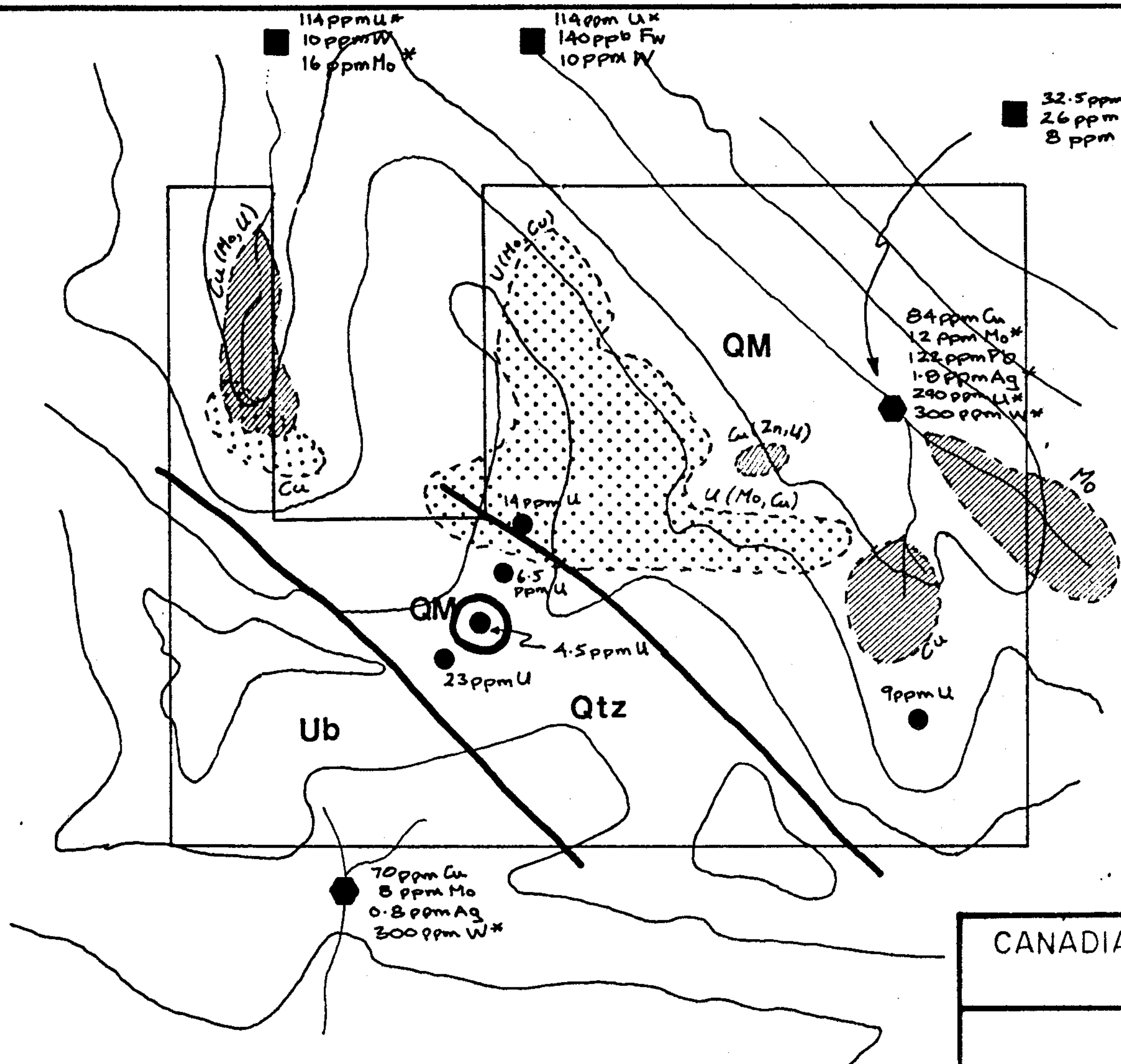
CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
OXY CLAIMS
YUKON TERRITORY

SOIL GEOCHEMISTRY

U - Th - Ag

Scale 1" = 2640' (1/2 mile) September, 1979



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
OXY CLAIMS
YUKON TERRITORY

COMPILATION OF GEOLOGY & GEOCHEMISTRY

Scale 1" = 2640' (1/2 mile)

September, 1979

Legend

QM : Biotite-quartz monzonite
Ub : Ultramafics
Qtz : Quartzite
: Geological Contact

Geochemistry

Stream Sediment Anomaly: Cu > 28ppm; U > 17ppm; Mo > 3ppm; Zn > 115ppm

Soil Anomaly: Cu > 22ppm; U > 7ppm

Rock geochemistry

Heavy Mineral geochemistry

1978 G.S.C. - U.R.P. (location approximate)

PLAN 12

Author's Qualifications

Eric J. Sacks

Education - Graduated Queen's University, Kingston, Ontario
M.Sc. in Geology, 1978
- Graduated University of Toronto, Toronto, Ontario
B.Sc. in Geology, 1977

Work Experience - Employed as field exploration geolgist with Canadian Occidental Petroleum Ltd., Minerals Division, Toronto, Ontario since 1978. Carried out and supervised mineral exploration programs in B.C. and Yukon.

Statement of Expenditures

Claims OXY 1-7, 9, 11, 13-18, 20, 22, 24-48

Record Numbers YA 44433 - YA 44474

		Pro-rated[1] Costs
Salaries and Benefits		$1,355.53
Travel and Accommodation		826.25
Drafting and Reproduction		290.29
Consultant		407.31
Camp costs and Supplies		930.47
Rental of Equipment		155.07
Other Work		396.49
	Sub-total	$4,361.41
Helicopter 2.6 hr. at $340/hr.	$ 884.00 [2]	
Geochemical 449 analyses	732.44 [3]	$1,616.44
	Total	$5,977.85

Notes

[1] Pro-rated on basis of 4.6 man-days worked on claims conducting geological/geochemical/geophysical surveys out of a total of 115.6 man-days spent on these surveys during Project Watsu (see attached breakdown on following sheet).

[2] Helicopter flying completed by Associated Helicopters Ltd.

[3] Geochemical analyses completed by Chemex Labs, Vancouver,.B.C. (see attached Cost Breakdown).

BC CLAIM GROUPS	TOTAL NO. OF MAN DAYS	PRO-RATED COSTS SALARIES & BENEFITS	TRAVEL & ACCOMMODATION	DRAFTING & REPRODUCTION	CONSULTANTS	CAMP COSTS & SUPPLIES	EQUIPMENT RENTAL	OTHER WORK	SUB-TOTAL "A"	REAL COSTS HELICOPTER at $310/hr	hrs.	GEOCHEMISTRY cost	# ana	SUB-TOTAL "B"	TOTAL "A" + "B"
ALLEN	4.3	1267.12	772.36	271.35	380.75	869.78	144.96	370.63	4076.95	620.00	2.0	617.80	385	1237.80	5314.75
ASP	5.0	1473.40	898.10	315.53	442.73	1011.38	168.56	430.97	4740.67	682.00	2.2	627.28	396	1309.28	6049.95
COT	3.0	884.04	538.86	189.32	265.64	606.83	101.13	258.58	2844.40	620.00	2.0	378.24	201	998.24	3842.64
KAZ	5.0	1473.40	898.10	315.53	442.73	1011.38	168.56	430.97	4740.67	527.00	1.7	854.64	454	1381.64	6122.31
MAR	1.0	294.68	179.62	63.11	88.55	202.28	33.71	86.20	948.15	310.00	1.0	62.40	18	372.40	1320.55
NEED	5.0	1473.40	898.10	315.53	442.73	1011.38	168.56	430.97	4740.67	837.00	2.7	966.36	560	1803.36	6544.03
PLATE	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	961.00	3.1	793.24	464	1754.24	6874.15
RAN	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	1209.00	3.9	775.28	524	1984.28	7104.19
SHAR 1&2	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	1023.00	3.3	639.36	402	1662.36	6782.27
SHAR 3&4, 9	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	1488.00	4.8	480.04	619	2268.04	7387.95
SHAR 5&6	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	899.00	2.9	750.36	469	1649.36	6769.27
SHAR 7&8	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	837.00	2.7	749.28	460	1586.28	6706.19
SUB-TOTAL (1)	55.7	16413.66	10004.78	3514.99	4932.03	11266.77	1877.72	4801.02	52810.97	10013.00	32.3	7994.28	4952	18007.28	70818.25
YUKON CLAIM GROUPS										at $340/hr					
BIG OX	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.69	5309.54	1020.00	3.0	879.76	541	1899.76	7209.30
BORDER	1.1	324.15	197.58	69.42	97.40	222.50	37.08	94.81	1042.94	204.00	0.6	165.16	101	369.16	1412.10
CLO	3.9	1149.25	400.52	246.11	345.33	788.87	131.47	336.16	3697.71	1224.00	3.6	316.96	185	1540.96	5238.67
CO	2.2	648.30	395.16	138.83	194.80	445.01	74.16	189.63	2085.89	918.00	2.7	535.24	372	1453.24	3539.13
GOAT	5.5	1620.74	987.91	347.08	487.01	1112.51	185.41	474.07	5214.73	782.00	2.3	1266.48	807	2048.48	7263.21
ICE	4.2	1237.66	754.40	265.04	371.90	848.56	141.59	362.32	3982.47	782.00	2.3	798.64	351	1280.64	5263.11
LICK	5.2	1532.34	934.02	328.15	460.44	1051.83	175.30	448.21	4930.29	748.00	2.2	920.36	546	1668.36	6598.65
MOX	5.9	1738.61	1059.75	372.32	522.43	1193.42	198.90	508.54	5593.97	1292.00	3.8	1205.04	705	2497.04	8091.01
OXY	4.6	1355.53	826.25	290.29	407.31	930.47	155.07	396.49	4361.41	884.00	2.6	732.44	449	1616.44	5977.85
PISA	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.68	5309.54	714.00	2.1	757.96	512	1471.96	6781.50
SAL	5.6	1650.21	1005.87	353.39	495.86	1132.74	188,78	482.78	5309.54	1190.00	3.5	497.12	411	1687.12	6996.66
TIER	4.9	1443.93	880.15	309.21	433.91	991.10	165.18	422.71	4645.46	1156.00	3.4	750.76	438	1906.76	6552.60
WOX	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.69	5309.54	952.00	2.8	841.08	579	1793.08	7102.62
SUB-TOTAL (2)	59.9	17651.35	10759.22	3780.01	5303.97	12116.23	2019.28	5162.98	56793.41	11866.00	34.9	9367.00	5997	21233.00	78026.41
TOTALS (1+2)	115.6	34065.00	20764.00	7295.00	10236.00	23383.00	3897.00	9964.00	109604.00	21879.00	67.2	1736128	10949	39240.28	148844.66

THE OXY CLAIM GROUP

GEOCHEMICAL COST BREAKDOWN

INVOICE #[1]	# OF SAMPLES	DESCRIPTION	COST[2]
32463	2	Cu, Mo, Pb, Zn, Ag, Sn, W, U	$ 51.20
32606	2	Th	10.00
31900	19	Cu, Mo, Pb, Zn, Ag, U	133.95
32440	51	Th	255.00
31746	18	U, F, As	166.50
31828	21	Cu, Mo, Pb, Zn, Ag, U	148.05
31943	11	Cu, Mo, Pb, Zn, Ag, U, Sn, W	150.85
		SUB-TOTAL	$915.55 less 20%
		TOTAL	$732.44

1 - all invoices from Chemex Labs unless otherwise noted
2 - cost includes preparation of samples