## CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

## GEOLOGY AND GEOCHEMISTRY OF THE

## DEMUTH CLAIM GROUP

Claim Sheet 82E12W/92H9E Lat.: 49<sup>0</sup>41'N Long.: 120<sup>0</sup>00'W

Claims: DEMUTH 1: Units 1-20 Similkameen Mining Division British Columbia

MINERAL RESOURCES BRANCH ASSESSMENT REPORT NO.

by: J.R. Hill, B.Sc.

Work Completed on August 23rd, 1978

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## PLANS ACOMPANYING REPORT

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12A:	Sediment Geochemistry )			
12B:	Water Geochemistry )	in	back	nocket
12C:	Heavy Mineral Geochemistry )	111	DUCK	poerce
12D:	Geology & Rock Geochemistry)	)		

#### Summary

The DEMUTH Claims are underlain by Jurassic Valhalla and Jura granodiorites and the original Canadian Oxy stream sediment samples ran as high as 191 ppm U.

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Detailed resampling replicated these results with a maximum stream sediment value of 930 ppm. Uranium in stream waters is also moderately high (3.5-4.7 ppb); and though a heavy mineral sample has a high uranium value (18 ppm U) and a high proportion of sphene (15%) and magnetite (50%) showing that some mechanical dispersion of uranium is taking place, the DMEUTH Claims should be radiometrically prospected and geologically mapped, and covered by soil and rock geochemistry.

## Location and Access

Area 36 is located 25 km west of Summerland along the Trout Creek road. It covers 13 km<sup>2</sup> along the NE facing slope above Demuth and is on NTS map sheets 82E/12W and 92H/9E. Physiography and Vegetation

Relief over the area is 650 m covering the lower portion of the steep-sided, NE facing slope of the Trout Creek valley. The vegetation consists of mature coniferous forests with abundant underbrush. Stream channels are narrow but steep-sided.

## Previous Work

From this area a total of 9 stream silt samples containing from 4.1 to 191 ppm U, were collected by Canadian Oxy during the Princeton/Nicky Project.



## Work Completed

The DEMUTH Claims were staked on June 1 by Eastern Associates Ltd., of Whitehorse, Y.T. The claim is 20 units in size, and covers the headwaters of the originally anomalous streams.

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A Canadian Oxy crew made up of Anderson and de Amaral completed geochemical sampling and prospecting of Area 36 on August 23. This represents 2 man-days of work. A total of 16 stream sediments, 5 stream waters, and 1 heavy mineral sample were collected.

As well, Anderson prospected along his traverse using a scintillometer and collected 1 rock chip sample for analysis. Geology and Rock Geochemistry (Plan 12D)

The area is underlain by intrusive rocks belonging to the Lower Cretaceous to Upper Jurassic Valhalla and Jura granodiorite plutons. A sample collected by Anderson was described as a medium-grained biotite quartz monzonite with K-spar phenocrysts up to 2 cm in size. The outcrop was characterized by a scintillometer response of 140 cps, and a chip sample was found to contain 0.5 ppm U.

## Geochemistry

(

Sediments (Plan 12A) - Sediments in streams draining the Valhalla granodiorite on the east side of the claim block are very high in U (145-930 ppm). Samples from the northwest parts of the claims are considerably lower in U (0.5-32 ppm).

Waters (Plan 12B) - Uranium in stream waters on the east side of the claim block is moderately high (3.5-4 ppb). There is a good positive correlation between U in water and pH; all the anomalous water samples have alkaline pH (7.4-7.7). Heavy Minerals (Plan 12C) - 18 ppm U is present in a heavy mineral sample taken from the anomalous creek. Mineralogically, the sample contains the following minerals: magnetite (50%), amphibole (30%), sphene (15%) and pyroxene (5%); traces of ilmenite, leucoxene, zircon, biotite and apatite are also present. The most likely minerals to contain U are sphene and magnetite.

#### Conclusions

A strong U anomaly has been defined by analyzing stream sediments (145-930 ppm) and stream waters (3.5-4 ppb) which drain Jurassic Valhalla granodiorite in contact with Jurassic Jura granodiorite. High U (18 ppm) in a heavy mineral sample indicates that some mechanical dispersion of U associated with resistate minerals (sphene and/or magnetite) has taken place.

## Recommendations

Systematic soil sampling, prospecting, geological mapping and rock geochemistry should be carried out over this claim block. The probable source of the uranium is the Valhalla granodiorite. Zones of deuteric alteration, uraniumbearing fractures, faults and pegmatites should be looked for.

Respect/fully submitted, Johannes

TORONTO November, 1978 •4 -

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#### APPENDIX 1

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#### Petrography

Specimen No. - 36-1 (8170)

Rock name - fresh porphyritic microgranite

Mineralogy - phenocrysts - K-feldspar

matrix - K-feldspar plagioclase quartz biotite hornblende

- accessory magnetite sphene apatite zircon
- secondary sericite chlorite clinozoisite

<u>Description</u> - This rock is a medium grained allotriomorphic granular granite, with K-feldspar phenocrysts up to about 2 cm long. The average grain size of the matrix is about 1-3 mm. Because of the coarse grain size, and the fact that much of the section is taken up by phenocrysts, an estimate of relative percentages was not feasible. However K-feldspar is greatly in excess of plagioclase, and quartz makes up more than 20% of the matrix. Hornblende and biotite make up about 15% of the rock. The texture of the matrix is an interlocking mosaic of irregularily shaped anhedra, of rather variable grain size.

K-feldspar occurs in two generations. The Phenocrysts are euhedral in their general form, but have irregular margins The groundmass K-feldspar forms irregularily in detail. Both phenocrysts and groundmass K-feldspar shaped anhedra. enclose frequent small crystals of plagioclase, and sometimes of differing orientations of K-feldspar. Small bleb like inclusions of quartz are also sometimes present. The K-feldspar is highly perthitic, and sometimes shows microcline twinning. Plagioclase tends to form roughly It is extremely fresh. equidimensional anhedra which sometimes show slight zoning. The composition is about intermediate oligoclase. Plagioclase crystals are usually fresh, to very slightly turbid, but occasional crystals contain small patches of sericitisation, the sericite usually being accompanied by a little clinozoisite. Hornblende and biotite tend to form relatively small crystals which tend to occur in loose clusters. Biotite crystals are compact, and usually very fresh. Occasional crystals show very slight chloritisation. Hornblende crystals have a somewhat more irregular form, but are also very fresh. Magnetite and sphene tend to be associated with the ferromagnesian minerals in accessory amounts. Quartz forms irregularily shaped anhedra, which tend to occur in patches of several crystals, forming a sutured interlocking mosaic.

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### APPENDIX 3

## GUIDE TO THE STATISTICAL REPORT

1. LIST OF VALUES AND RANK.

The Sample Number is followed by the measured analytical value and % Rank for each element or parameter. For measured values below the detection limit, the assigned value is 1/2 of the detection limit. A - sign indicates that no analytical value is available. The number of samples with values for a given element is given at the end of the table. The Rank specifies the position of the corresponding measured value in a sequence from the highest to the lowest values; it is given in % of the number of values for that element to the nearest integer. For example if there are 55 samples, all values below detection are ranked 100 (there are no lower values). The highest value is ranked 2 (1 sample is 2% of 55). Missing values are given 0 rank.

## 2. STATISTICAL SUMMARY TABLE. For Element E with N values

a) AR (Arithmetic) MEAN:  $MA = \overline{E} = \frac{1}{N} \sum E$ 

b) STD DEV (Standard Deviation): 
$$SD = \sqrt{\frac{1}{N-1} \sum (E-\overline{E})^2}$$

c) GEOM (Geometric) MEAN:  $MG = Exp\left[\frac{1}{N}\sum_{n} \ln(E)\right]$ 

d) LN DEV (Deviation of the Logarithms):

$$LD = Exp\left[\sqrt{\frac{1}{N-1}\left[(\ln(E) - \ln(MG)\right]^2}\right]$$

In the formulas ln indicates the Natural Logarithm, Exp the exponential function.

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The Geometric Mean and Logarithmic Deviation are expressed in the same measuring units as the corresponding arithmetic parameters.

- e) The RANGE gives the Minimum and Maximum values
- f) SMPLS is the total number of samples with values for the element (including below detection)
- g) < DET LIM indicates how many of the sample values are below the detection limit.
- 3. DEVIATIONS FROM THE MEANS.

The table gives the VALUE of the MEAN and at 1 and 2 deviations below and above the mean. The % indicates the RANK of such value, or what percentage of the measured values would be above it. The deviations are given for both the Arithmetic (ARITH) and Logarithmic (LOG) parameters. All Values are expressed in the same measuring units.

Example. Given MA = 10.0 ppm

SD = 15.0 ppm  $MG = 7.0 \quad \ln (MG) = 1.95$   $LD = 2.0 \quad \ln (LD) = 0.69$ For Mean + 2 DEV  $ARITH - VALUE \text{ is } 10 + 2 \times 15 = 40 \text{ ppm}$   $LOG - VALUE \text{ is } Exp \left[ \ln (MG) + 2 \times \ln (LD) \right] = Exp (3.33) = 28 \text{ ppm}$ 

The LOG value could also be computed directly in true units:

 $V = MG \times (LD)^2 = 7 \times 4 = 28$ 

4. HISTOGRAM AND CUMULATIVE FREQUENCY.

The INTERVAL limits values, the number of SAMPLES in each interval and the Cumulative Frequency are printed. The scaled Bar Diagram (\*\*\*\*) illustrate the number of samples in the interval. The + plots the Cumulative Frequency Curve, rising to 100% at the right. The Number of Samples, the number below the detection limit and the Minimum and Maximum values are shown in the last line.

5. CORRELATION COEFFICIENTS.

The table consists of cells for pairs of elements. In each cell the first value is the Linear Correlation Coefficient for the pair. The second line is the range of the level of significance; it indicates the % probability that the correlation is due to causes other than random measuring errors and is computed by a modified Student-t test at the 50, 60, 80, 90, 95 and 99% levels.

A-2

A 0-50 range means that there is better than 50% chance that the correlation is caused by random errors.

A 99-\*\* range means that there is less than 1% probability that errors cause the correlation, or that there is better than 99% certainty that the coefficient reflects the true behaviour of the data.

The third value in the cell indicates the number of samples in the pair, including values below detection.

For N pairs of elements X and Y with means X and Y and deviations sX and sY, the correlation coefficient R is

$$R = \frac{\sum XY - N \overline{X}\overline{Y}}{N \cdot SX \cdot SY}$$

6. SCATTERGRAM AND LINEAR REGRESSION.

For selected pairs of elements the values are plotted in the scattergram using logarithmic scales on both axes; the labels are in true measuring units. An \* indicates one occurrance of a pair of values, a 2 is for two pairs at the same position, 3 for three pairs, etc. up to 9. For ten or more pairs a + is used.

The linear regression is computed assuming errors in both ; elements, thus the fit minimizes the sum of the distances from the occurrances to the regression line.

Two possible fits result, the more logical being shown by the regression line.

The last line in the page specifies the number of sets of pairs plotted, the additional number of values for each element below the detection limit (not plotted), the linear correlation coefficient for the plotted values and the percentage of the values which can be predicted from the correlation.

A-3







![](_page_24_Figure_0.jpeg)